

Quality of Sleep and Day-Time Sleepiness among Undergraduate Medical Students in Manipur: A Cross -Sectional Study**Bemma Konthoujam¹, Th. Amumacha Singh², Seram Chaoba Devi³**¹Assistant Professor Department of Community Medicine, Shija Academy of Health Sciences, Langol, Imphal, Manipur²Assistant Professor, Department of Community Medicine, Shija Academy of Health Sciences, Langol, Imphal, Manipur³Assistant Professor, Department of Psychiatry, Shija Academy of Health Sciences, Langol, Imphal, Manipur

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Abstract**Background:** Adequate sleep is critical for medical students to optimize cognitive function, memory consolidation and emotional regulation. Medical students are vulnerable to sleep disturbances as they go through new environment, academic stress, long study hours, emotional challenges, and exhaustion. Poor sleep quality among the medical students can negatively impact their well-being and future professional competence.**Methods:** An Institution-based cross-sectional study was conducted among 342 undergraduate medical students of Shija Academy of Health Sciences, Manipur from 18th March to 18th April, 2025 using non-random convenience sampling technique. The study was conducted using predesigned, pre-tested, validated tools which are the Pittsburg quality of sleep index (PQSI) scale and Epworth Daytime Sleepiness Scale (EDSS). Data was analysed in SPSS Version 25. Descriptive statistics are expressed in mean, frequency and percentages. Chi-square test was applied to test the association of quality of sleep with selected variables of interest and p value <0.05 was taken as statistically significant.**Results:** The mean age of the study participants is 21.3 + 1.6 years. More than half (58.2%) of the medical students have poor sleep quality as per Pittsburgh Quality of Sleep Index (PQSI) score while extreme day time sleepiness was reported among 38.8% of the students as per Epworth Daytime Sleepiness Scale (EDSS). No Statistically significant association was found with the quality of sleep and age, semester, residence, use of electronic gadgets and consumption of alcohol, tobacco products, caffeine.**Conclusion:** More than half of the students have poor quality of sleep and a significant number of students also have day time sleepiness. Creating a positive environment and promoting good sleep hygiene among the medical students can help to achieve and maintain good quality of sleep.**Keywords:** Quality of Sleep, Medical students, PQSI, EDSS, Manipur.**DOI:** 10.25258/ijcpr.18.7.97

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Introduction

Sleep is a state of mind and body which typically recurs for several hours in which the nervous system is inactive, eyes closed, postural muscles relaxed and consciousness practically suspended [1]. Quality of sleep is defined as one's satisfaction with the sleep experience, which integrates aspect of sleep initiation, sleep maintenance, sleep quantity and awakening refreshment [2]. As per the expert panel report published in Sleep Health-The Journal of the National Sleep Foundation 2015, in younger adults (18-25) the optimum Sleep duration range is 7-9 hr [3]. Medical students are a subgroup of the general population who are more vulnerable to poor sleep quality. Global epidemiological data

about sleep problems among medical students of different nationalities reported a very high range of 19% to 90%[3]. Studies across India have found over 60% of medical students report insufficient sleep and poor sleep quality this exceeds rates for peers and the general population.[4] Medical students face a lot of challenges as they enter the dynamic medical course like stress, new environment, long study hours, hectic clinical duties, fear of failure, and emotionally challenging work [3]. Adequate quality of sleep is a prerequisite for optimum functioning of a student's mind and body. Concentration and attention difficulties along with poor academic performance

are linked with poor sleep quality among students because good sleep is needed for the best of neuro-cognitive functions, psychomotor performance, physical and mental health [5]. Medical students being the future healthcare providers, identifying poor sleep quality among them is an essential step to know the extent of the problem and manage it effectively to produce competent medical graduates. However, the extent of the problem has not been explored in this region. The present study has therefore been conducted to assess the quality of sleep and day time sleepiness among the medical students of the first private medical college of the state, Shija Academy of Health Sciences (SAHS), Manipur.

Objectives

1. To assess the quality of sleep and day time sleepiness among Medical students of Shija Academy of Health Sciences
2. To find out the association of quality of sleep with socio-demographic and other lifestyle characteristics.

Materials and Methods

Study design: An Institution-based cross-sectional study was conducted among Undergraduate Medical students of Shija Academy of Health Sciences, Manipur from 18th March to 18th April, 2025.

Inclusion and Exclusion Criteria: All the undergraduate medical students who were present during the data collection period and gave consent to participate in the study were included.

Those who could not be reached even after 2 attempts and those who were seriously ill were excluded from the study.

Sample Size and Sampling Technique: About 342 undergraduate MBBS students were selected using non-random convenience sampling technique. It was decided to collect information from all the students of the institution but in spite of repeated 2 attempts, only 342 students could be reached during the data collection period.

All 342 students gave consent for participation in the study. Thus, the response rate was cent per cent.

Study Tool: A validated, predesigned, pre-tested, structured questionnaire i.e., the Pittsburg quality of sleep index (PQSI) scale and Epworth Daytime Sleepiness Scale (EDSS) was used.

Operational Definitions

- **Use of tobacco products-** Person who used any product containing tobacco (smoke/smokeless) during the last one month.
- **Use of alcohol:** Person who consumed alcohol on any day during the last one month.

- **Caffeine intake:** Consumes caffeine containing drinks > 3 cups per day or >400mg of coffee/day during the last one month.
- **Use of electronic gadgets** (Mobile phones/Laptops/Tablets/TVs/Gaming consoles) for >2hrs before going to bed during the last one month.

Pittsburgh Sleep Quality Index (PSQI) [6]: It is a self-reported questionnaire to assess the quality of sleep. There are Nineteen items with seven "component" scores, each of which has a range from '0' to '3'. A score '0' indicates no difficulty and '3' indicates severe difficulty. The sum of these seven component scores yields one PSQI global score with a range of '0' to '21' points. A score '0' indicates no difficulty and '21' indicates severe difficulty in all the 7 components.

- The 7 component scores are: 1. Sleep Quality, 2. Sleep Latency, 3. Sleep Duration, 4. Sleep Efficiency, 5. Sleep Disturbances 6. Use Of Sleeping Medication And 7. Daytime Dysfunction.
- Good sleep quality is defined as PQSI score $\leq$ 5, while scores above 5 demonstrate poor quality

Epworth Sleepiness Scale (EDSS) [7]: It is scales to measure daytime sleepiness using a very short questionnaire. There are 8 questions and scores are range from '0' to '3' for each question. 0 = would never doze, 1 = slight chance of dozing, 2 = moderate change of dozing, 3 = high chance of dozing. The higher the ESS score, the higher that person's average sleep propensity in daily life (ASP). The eight questions added together to get a single number which range from '0' to '24'. The scores are interpreted as follows:

- 0-7: Unlikely to be abnormally sleepy/Normal
- 8-9: An average amount of daytime sleepiness.
- 10-15: Excessively sleepy depending on the situation.
- 16-24: Excessively sleepy and should consider seeking medical attention.

Results

A total of 342 medical students participated in the study. The age of the students ranged from 18 years-27 years with a mean age 21.3 ± 1.6 years. Table 1 described the socio-demographic profile of the study participants. More than half (63.5%) of the students were females and around 63.2% of the participants belonged to Hindu by religion. Out of the total 342 students who participated in the study, 39.8% were in 1st semester, 29.5 % were in 3rd semester and 30.7% were in 5th semester. More than half (57 %) of the students resides in college hostel, 33 % were day scholar while 9.4 % of the students stay in rental house.

Table 1: Distribution of the study population according to socio-demographic profile (n=342)

Socio Demographic Profile	Number (n)	Percentage (%)
Gender		
Male	122	35.7
Female	217	99.1
Transgender	3	100.0
Religion		
Hinduism	216	63.2
Islam	25	7.3
Christianity	57	16.7
Sanamahi	44	12.9
Place of Residence		
Day Scholar	115	33.6
College hostel	195	57.0
Rent	32	9.4
Semester		
2nd semester	136	39.8
3rd semester	101	29.5
5th semester	105	30.7

Table 2 shows the lifestyle characteristics of the study participants.

Majority of the students (83.9 %) reported consumption of coffee > 3 cups a day. It was observed that only 6.4 % of the students used products containing tobacco in smoke and/or

smokeless form and 12% of the students reported use of alcohol during the past one month. Most of the students (86.2%) used electronic devices like mobile phone/laptop/tablets/TV/gaming device for more than 2 hrs.at night before going to bed during the last one month.

Table 2: Distribution of the study population according to lifestyle characteristics (N=342)

Lifestyle characteristics	Number (n)	Percentage (%)
Use of Tobacco Product(s) (Smoke and/or smokeless)		
Yes	22	6.4
No	320	93.6
Alcohol use during last one month		
Yes	40	11.7
No	302	88.3
Caffeine intake > 3cups per day		
Yes	287	83.9
No	55	16.1
Use of electronic gadgets > 2hrs at night		
Yes	295	86.3
No	47	13.7

Upon assessing the various components determining the quality of sleep more than half (55.8 %) of the participants responded they have fairly good subjective sleep quality. Only 9.9 % of the students have adequate sleep duration of >7 hrs. Majority (83%) of the students have a sleep efficiency of more than 85%. More than half (69.3%) reported to have sleep disturbance less than once a week while only around 2% have sleep disturbance of three or more than three times a week. Majority (92.6 %) of the students reported not using any kind of sleep medication during the past one month. Nearly half (49.1%) responded that day time dysfunction is only a slight problem while

8.8% responded it to be a very big problem. Upon assessing the seven components determining the quality of sleep, the Global PSQI score of <5 indicating good quality of sleep was found to be 41 % while a score of more than 5 indicating poor sleep quality was 58.2% [Table 3]. Upon assessing the day time sleepiness of the students using the Epworth Daytime Sleepiness Scale (EDSS) around 41.5 % of the participants were found unlikely to be abnormally sleepy during day time, 19.6 % have average day time sleepiness, 32 % to be excessively sleepy depending on the situation and 6.1 % of the students were excessively sleepy, and should consider seeking medical attention [Table 5]

Table 3: Components of PQSI score of the participants

SI No	PQSI Component item	Score			
		0	1	2	3
1	Subjective Sleep quality	73(21.3)	191(55.8)	64(18.7)	14(4.1)
2	Sleep Latency	93(27.2)	127(37.1)	87(25.4)	35(10.2)
3	Sleep Duration*	34(9.9)	130(38)	168(49.1)	10(2.9)
4	Sleep Efficiency	284(83)	38(11.1)	16(4.7)	4(1.2)
5	Sleep Disturbance	31(9.1)	237(69.3)	67(19.6)	7(2.0)
6	Sleep Medication	317(92.7)	16(4.7)	5(1.5)	4(1.2)
7	Daytime dysfunction	67(19.6)	168(41.9)	77(22.5)	30(8.8)

*Sleep duration 0= slept for more than 7 hours, 2= slept for 6-7 hours, 3=slept for 5-6 hours, 4=slept for less than 5 hours

Table 4: Quality of sleep of the study participants based on Global PQSI score

Global PQSI Score	Frequency	Percentage
PQSI <5 (Good Quality Sleep)	143	41.8
PQSI >5 (Poor Quality Sleep)	199	58.2
Total	342	100.0

However, there were no statistically significant association between quality of sleep and lifestyle factors like caffeine consumption, alcohol and tobacco consumption, excess screen time before bedtime and also with socio-demographic variables like semester, place of residence and gender of the student. [Table 4]

Table 4: Association of quality of sleep with socio-demographic and lifestyle characteristics of the participants.

Socio demographic and lifestyle characteristics	Category	Good(< 5) n(%)	Poor(>5) n (%)	χ^2	p-value
Gender	Male	53(45)	69(56.5)	0.279	0.870
	Female	89(41.0)	128(58.9)		
	Transgender	1(33.3)	2(66.6)		
Semester	2nd semester	34(33.6)	67(66.3)	4.071	0.131
	3rd semester	60(44.1)	76(55.8)		
	5th semester	49(46.6)	56(53.3)		
Place of Residence	Day Scholar	48(41.7)	67(58.2)	4.703	0.095
	College hostel	76(38.9)	119(61.0)		
	Rent	19(59.3)	13(40.6)		
Use of Tobacco product(s)	Yes	7(31.8)	15(68.1)	0.965	0.378
	No	136(42.5)	184(57.5)		
Use of Alcohol	Yes	15(37.5)	25(62.5)	0.346	0.612
	No	128(42.3)	174(57.6)		
Use of Coffee	Yes	115(40)	172(59.9)	2.229	0.135
	No	28(50.9)	27(49)		
Use of electronic gadgets	Yes	125(42.3)	170(57.6)	0.277	0.636
	No	18(38.2)	29(61.7)		

Table 5: Epworth Daytime sleepiness scale of the study participants

EDSS Score	Frequency	Percent
0-7: Unlikely to be abnormally sleepy/Normal	142	41.5
8-9: An average amount of daytime sleepiness.	67	19.6
10-15: Excessively sleepy depending on the situation.	112	32.7
16-24: Excessively sleepy and should consider seeking medical attention.	21	6.1
Total	342	100.0

Discussion: The present study found that more than half of the medical students (58.2%) have poor sleep quality. The findings of our result are comparable to the study done by Datta A et al in Tripura among 203 medical students [1]. In a study done by Nair RK et al among 132 medical students

who were enrolled in the study, 55.3% (73/132) had an abnormal PQSI score [8]. The causes of poor sleep quality among medical students in the present study can be attributed to adaptation to new environment, hectic schedule and increased academic load in the medical curriculum. Male

students(45%) had a higher proportion of good sleep quality when compared to females (41%) in the present study which is found to be similar with other study findings done by Nair, R. K., et al in Mysuru [8] and M.B Shalini et al (68.6%) in Telangana [9]. This could be due to poor coping skills and emotional vulnerability of females compared to males. However there was no significant association between gender and quality of sleep ($p=0.76$) Similar finding was also noted in study conducted by Fareh Z et al in Punjab where gender had no effect on sleep quality ($p=0.24$) [10]. Students of 3rd and 5th semester have better sleep quality as compared to students in their 2nd semester. This could be due to the fact that they are yet to be accustomed to the new work environment and also their hectic academic schedules. This finding was consistent with that of Basu et al [3]. Students residing in college hostels have higher prevalence of poor sleep quality as compared to those residing at home or rental house in our study This could be attributed to overcrowding of the hostel rooms, lack of privacy, space and disturbance from the roommates /peers leading to poor sleep pattern .The findings of our study was similar to that of the study done Ibrahim NK at al [11] and Fawzy M et al [12] .However no significant association was observed between stream, year of study and sleep quality ($p<0.05$) .Similar finding was observed by M.B Shalini et al ($p=0.81$) [9] .The present study revealed that students with prolonged use of electronic gadgets at night like mobile phones/Laptops/Tablets/TVs/Gaming consoles was found have poor quality of sleep. This could be due to the fact that the screen of such electronic media devices emits blue lights which suppresses the physiological nocturnal secretion of the sleep-promoting hormone melatonin and thereby disrupts the circadian rhythm. The findings were however not significant statistically ($p= 0.59$). Ibrahim et al [11] in their study at Saudi Arabia also revealed absence of statistical association between the night use of social media and sleep quality. However other studies Fareh Z et al [10] found a significant association between smartphone addiction and sleep quality ($p=0.027$). The present study result revealed that excessive consumption of caffeine was associated with poor sleep which agrees with the findings of Ibrahim et al [11] and Sanchez et al [13] .Gardiner C et al in a systematic review and meta-analysis observed caffeine consumption reduced total sleep time by 45 min and sleep efficiency by 7%, with an increase in sleep onset latency of 9 min and wake after sleep onset of 12 min [14] In the present study the quality of sleep is found to be poor among those who do use tobacco product(s) (68.1%) as compared to those who do not use tobacco however no significant association was found ($p=0.32$).Nair

RK et al [8] in their study found abnormal PSQI scores was associated with smoking ($p<0.05$).Also Gaurjeet Kaur in their study found Smokers had 2.212 higher odds of poor sleep quality as compared to non-smokers ($p=0.010$) [15]

Poor quality of sleep was found to be more prevalent among those students who consume more than 3 cups of coffee a day. However there was no statistically significant association between caffeine intake and sleep quality in our study. Several other studies by Ibrahim NK [11] Sanchez et al revealed association of stimulants beverages such as coffee / tea with poor sleep quality [13].

In this study, the EPSS scale showed 32.7% of the students are excessively sleepy during daytime depending on the situation and 6.1 % of them have excessively daytime sleepiness regardless of the situation and needs medical attention. Day time sleepiness was present in 24.91% of the study population in the study done by Basu et al [3] , which was higher than a study by Giri et al[16] at Maharashtra (17.3%) and lower than study by Basu et al [3] (24.91%) and R Auradha et al (28.6%) [17]

Strength and limitation: This is the first ever study done in the region to assess the quality of sleep and daytime sleepiness among medical students. The Pittsburgh sleep quality index is a widely used validated tools for assessing sleep quality which evaluates all the domains of sleep quality. However there is limitation of generalizability of our study findings due to small sample size and non-random sampling method. Since the responses were collected using a self-administered questionnaire; there may be an information bias.

Conclusion

More than half of the students studying at Shija Academy of Health Sciences (SAHS) have poor sleep quality and day time sleepiness as assessed by the PQSI and EDSS respectively. This study finding highlights a strong need for providing greater support and a positive environment for improving the quality of sleep among the students. Measures such conducting counselling sessions, promoting good “sleep hygiene” and healthy lifestyle will bring a positive change, improve their quality of life and master their learning process.

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