e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(10); 716-721

Original Research Article

Assessment of Quality of Sleep among Medical Students in a Tertiary Care Centre: A Cross-Sectional Study from South India

R. Saranya[1], K.N. Ponnien Selvan[2], C.L. Gokila Preethi[3], Kavinath R.[4], Pravin S.[5], Priyadharshini[6]

[1]Assistant Professor, Department of Community Medicine, Government Dharmapuri Medical College, Tamil Nadu, India

[2]Assistant Professor, Department of Community Medicine, Government Dharmapuri Medical College, Tamil Nadu, India

[3]Assistant Professor, Department of Community Medicine, Government Dharmapuri Medical College, Tamil Nadu, India

[4,5,6]CRMI

Received: 01-07-2026 / Revised: 15-08-2026 / Accepted: 21-09-2026

Corresponding author: Dr. R. Saranya

Conflict of interest: Nil

Abstract

Background: Sleep quality is an essential determinant of physical health, cognitive performance, and emotional well-being. Medical students are particularly vulnerable to poor sleep due to demanding academic schedules, lifestyle habits, and stress. Assessing sleep quality and its associated factors among medical students is important for developing targeted interventions to promote healthy sleep practices.

Objectives: To assess the quality of sleep among medical students of a tertiary care centre, Tamil Nadu.

Methods: This study conducted among MBBS students in a tertiary care teaching hospital, during the period of September 2024 to October 2024. Data was collected using Pittsburgh sleep pattern questionnaire via google forms.

Results: Prevalence of poor quality of sleep is found to be 66% among medical students. Proportion of poor sleep quality was reported higher among females (55%) compared to males (45%), internship students (84.8%) have poor quality of sleep compared to other academic year students. Multivariate logistic regression shows that the students who are not doing physical activity are at 1.7 times increased risk of getting poor quality of sleep.

Conclusion: This study shows several factors are responsible for poor quality of sleep among students, which shows that it is important to set up an academic counselling sessions at regular intervals to students to change their healthy risky behaviours which affects their quality of sleep which in-turn affects their quality of life.

Keywords: Quality of Sleep, Medical Students, Undergraduates, Mobile Phone.

DOI: 10.25258/ijcpr.18.10.97

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0) and the Budapest Open Access Initiative (http://www.budapestopenaccessinitiative.org/read), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Sleep is a biological necessity, it is vital for health and well-being in children, adolescents and adults. [1] Healthy sleep is important for mental health, cardiovascular, cerebrovascular and metabolic health. Healthy sleep requires adequate duration ,good quality appropriate timing and regularity. [2] Sleep is of particular interest in medical students because of the relationship between sleep and stress and the potential impact on quality of patient care [3]. Medical students may not consider sleep as a top priority due to their academic requirements, long working hours which in turn reduce their sleeping time to cope with their study curriculum and workload. [4]

Sleep deprivation will lead to decrease in reaction time and increase in errors which in turn lead to disastrous outcomes in professions like medicine [5,6]. The prevalence of sleep disorders in India is high. As per the recommendations for National sleep policy in India study, has pegged the percentage of insomnia to be as high as 33% among adults in India [7]

Although several studies have assessed sleep quality among medical students in different settings, the prevalence and associated factors vary widely depending on geographic location, academic environment, and lifestyle patterns.

Limited data are available regarding the sleep quality of medical students in specific institutional settings, highlighting the need for localized research to identify contributing factors and develop targeted interventions.

Materials and Methods

Study Design: Analytical Cross-sectional study.

Study Setting: Tertiary care teaching hospital in Dharmapuri, Tamil Nadu.

Study Duration: September 2024 to October 2024.

Study Population: Undergraduate medical students.

Inclusion Criteria: Those who are willing to participate in the study.

Sample Size: As per the study "Sleep Quality and Daytime Sleepiness among Medical Undergraduate Students in Tamil Nadu: A Cross-sectional Study" prevalence (p) of poor quality of sleep is 54.2%. Based on this sample size has been calculated as 397

Sampling Method: Simple random sampling.

Study Procedure and Tool: Students selected by simple random sampling were asked to complete a self-administered semi-structured questionnaire through an online platform, which includes detailed study information sheet and consent form to participate in the study followed by questions on socio demographic profile of the participant, information regarding exercise(atleast 5 times a week for 30 mins/day), smoking, alcohol intake, bedtime intake of coffee, duration of mobile phone usage(recommended for adults is 2-4 hrs and it should not exceed 8hrs) and PSQI scale to assess the sleep quality.

PSQI [Pittsburgh Sleep Quality Index]**:** It is a self-reported instrument to assess the quality of sleep (Cronbach's alpha 0.70-0.83). It consists of 19 individual items, creating seven components that produce one global score. The seven components are subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medication and daytime dysfunction. Each item is weighted on a 0-3 interval scale. The global PSQI score is then calculated by adding the seven component scores, providing an overall score ranging from 0-21. A total score of 5 or Greater is indicative of poor sleep quality. [8]

Statistical Analysis: The data was entered and coded in Microsoft excel and analysed with SPSS-v16.0. Descriptive statistics such as frequency and percentages were used to express socio-demographic profile, lifestyle factors, sleep quality and daytime sleepiness etc. Chi-square test was used for association of factors with sleep quality. A p-value of <0.05 was considered as statistically significant.

Results

The analysis included data collected from 397 students. The mean age of the students was 21.5yrs. Among the participants males were 180(45%) and females were 217(55%). Most of the students were hostellers 343(86.4%) and the remaining 54(13.6%) were day scholars. Year of study distribution was 95(23.9%) from first year, 93(23.4%) from second year, 88(22%) form third year,75(18.9%) form final year and 46(12%) from interns. The distribution of lifestyle factors which may affect the quality of quality of sleep among students are smoking (6%), alcohol (6%), bedtime coffee (7%), without physical activity (46%) and mobile usage of 4-8hrs (64%) >8hrs (34%) as shown in the Table 1 & 2

Table 1: Distribution of Pittsburgh sleep quality index among students:

PSQI	Frequency	Percentage
Good quality of sleep (<5)	133	34%
Poor quality of sleep (≥5)	264	66%

On analysing the quality of sleep among students using PSQ index almost 66% of students had poor quality of sleep. Table 2. Shows the association of demographic and lifestyle characteristics associated with quality of sleep. On analysing the results of association except gender all the other factors are found to be significantly associated with poor quality of sleep. Interns are more prone for poor quality of sleep compared to other years of students. Day scholars had poor quality of sleep compared to hostellers and students with no physical activity, having coffee before going to bed are having poor quality of sleep. Students with the habit of having alcohol and smoking are more prone for sleep disturbances. Pertaining to the effect due to poor quality of sleep 35% of students experienced day time sleepiness, 11% had disorientation and 52% felt less enthusiastic.

Table 2: Association of sociodemographic factors and lifestyle factors with quality of sleep

Variables		Quality of sleep		p-value
		Good	Poor	
Age	**≤19yrs**	19(42.2%)	26(57.8%)	
	≥20yrs	114(32.4%)	238(67.6%)	0.188
Gender	**Male**	64(35.6%)	116(64.4%)	0.430
	Female	69(31.8%)	148(68.2%)	
Year of study	**1st year**	38(40%)	57(60%)	**0.010****
	2nd year	37(39.8%)	56(60.2%)	
	3rd year	30(34.1%)	58(65.9%)	
	4th year	21(28%)	54(72%)	
	CRMI's	7(15.2%)	39(84.8%)	
Residence	**Hosteller**	122(35.6%)	221(64.4%)	**0.028****
	Day scholar	11(20.4%)	43(79.6%)	
Physical activity	**Yes**	84(39.3%)	130(60.7%)	**0.009****
	No	49(26.8%)	134(73.2%)	
Coffee intake	**Yes**	3(10.7%)	25(89.3%)	**0.007****
	No	130(35.2%)	239(64.8%)	
Alcoholic	**Yes**	1(4.0%)	24(96%)	**0.001****
	No	132(35.5%)	240(64.5%)	
Smoking	**Yes**	1(4.5%)	21(95.5%)	**0.002****
	No	132(35.2%)	243(64.8%)	
Mobile phone usage	**<4hrs**	55(40.1%)	82(59.9%)	0.125
	4-8hrs	76(30%)	177(70%)	
	>8hrs	2(28.6%)	5(71.4%)	

****p-value<0.05-Statistically significant**

Table 3: Multivariate logistic regression analysis lifestyle factors with quality of sleep

Variables	Category	Adjusted odds ratio	p-value	95% CI
Physical activity	Yes	1	**0.022****	1.075-2.568
	No	1.662		
Coffee	Yes	1	0.272	0.128-1.783
	No	0.478		
Alcoholic	Yes	1	0.084	0.019-1.279
	No	0.157		
Smoker	Yes	1	0.141	0.025-1.686
	No	0.207		

****p-value<0.05-Statistically significant**

Multivariate logistic regression was done among the significant factors found out by univariate analysis to find out the truly associated factors for poor quality of sleep. It shows that the students who are not doing physical activity are 1.7 times increased risk of getting poor quality of sleep. All other factors found to be insignificant.

Discussion

Our study shows students have a high prevalence of poor quality of sleep(66%) which is similar to the study done in south India by Srirangaramasamy et al. which shows 68.6% of medical students had poor quality of sleep [9] and higher than the study done by Kumar et al. which shows 51.3% of students had poor quality of sleep [10] by Kumar VA et al.

In our study age doesn't show any significant association with quality of sleep which is contrary to the study done by Abdelkader Jalil et al which shows significant association between quality of sleep and age. [11] Gender shows no significant association with quality of sleep in our study which is also contrary to the study done in Latin America which shows male has poor quality of sleep compared to females. [12] The lack of significant association across age and gender in the current study may be attributed to the relatively narrow age range of medical students, resulting in limited variability across age groups. Additionally, medical students, irrespective of gender, are often exposed to similar academic schedules, stress levels, and lifestyle patterns, which may influence sleep quality uniformly.

In the present study, year of study showed a significant association with sleep quality in bivariate analysis; however, this association was not sustained in multivariate analysis. This suggests that the observed relationship between year of study and sleep quality may be influenced

by other confounding variables. Factors such as academic workload, stress levels, lifestyle habits, and screen exposure, which vary across academic years which is similar to the study done by Abdullah et al. [13] Day scholars had poor quality of sleep compared to hostellers in our study which is in contrary to the study done by Zarafshan Shafique in Pakistan which shows hostellers had poor quality of sleep [14]. Early morning traffic-related delays may also lead to irregular sleep patterns among day scholars. Furthermore, household responsibilities and environmental disturbances at home may negatively influence sleep quality. In contrast, hostellers may benefit from proximity to academic facilities, allowing more time for rest despite academic demands. Our study shows that students who don't do physical activity regularly had poor quality of sleep. This result is consistent with numerous previous studies that have documented a positive relationship between physical activity and sleep quality [15,16]. Physical activity helps in reducing stress and regulating circadian rhythms, thereby contributing to improved sleep quality among medical students. Coffee consumption shows no significant association with poor quality of sleep by multivariate analysis which is similar to the study done by Alshumrani et al. on consumption of beverages which shows poor quality of sleep and coffee consumption alone doesn't have any association [17]. Alcohol consumption and smoking shows no significant association with poor quality of sleep. This result is not in line with numerous previous studies that have documented a positive relationship between drug abuse and sleep quality [18,19]. Mobile phone usage more than 8hrs is 71.4% in our study which shows no significant association which is contrary to the study done among medical students in Dehradun India [20].

In the present study, coffee consumption, alcohol intake, smoking, and mobile phone usage showed significant associations with sleep quality in bivariate analysis. However, these associations were not retained in multivariate analysis, indicating that these variables may not independently influence sleep quality. The observed associations in bivariate analysis may be explained by confounding factors such as academic stress, physical inactivity, and lifestyle patterns, which are often interrelated with substance use and excessive mobile phone usage. After adjusting for these potential confounders, the individual effects of coffee consumption, alcohol use, smoking, and mobile phone addiction were attenuated, suggesting that their influence on sleep quality may be indirect rather than direct.

Conclusion

This study highlights a substantial burden of poor sleep quality (66%) among medical students, underscoring an often-overlooked yet critical determinant of academic performance, mental health, and future patient care quality. Notably, physical inactivity emerged as the only independent modifiable risk factor, emphasizing a practical and scalable intervention target.

In resource-constrained academic settings, these findings provide actionable evidence for instituting low-cost, institution-based strategies such as structured physical activity programs, sleep hygiene education, and periodic student well-being assessments. Addressing sleep health at the undergraduate level may not only enhance student well-being but also contribute to safer clinical practice and improved healthcare delivery in the long term.

Limitations: This study was conducted in a single institution, which may limit the generalizability of the findings to other institutions or populations with different academic environments, lifestyles, or socio-cultural backgrounds. As this study employed a cross-sectional design, causal relationships between sleep quality and associated factors could not be established. Only associations between variables could be assessed at a single point in time. Participants may not have accurately remembered their sleep patterns or lifestyle behaviors over the specified recall period, which could affect the reliability of responses**.**

Declarations: Approval from the Institutional Ethics committee has been obtained and ethical guidelines were followed as per institutional guidelines. Data analysed are available with the corresponding author and not shared publicly as per institutional protocols. Authors also declare the use of AI tool (Chat-GPT 4.0) for language moderation and all authors have reviewed the manuscript before submission.

References

1. Bruce ES, Lunt L, McDonagh JE. Sleep in adolescents and young adults. Clin Med. 2017 Oct;17(5):424–8. doi:10.7861/clinmedicine.17-5-424 PubMed PMID: 28974591; PubMed Central PMCID: PMC6301929.
2. Watson NF, Badr MS, Belenky G, Bliwise DL, Buxton OM, Buysse D, et al. Recommended Amount of Sleep for a Healthy Adult: A Joint Consensus Statement of the American Academy of Sleep Medicine and Sleep Research Society. SLEEP. 2015 Jun 1. doi:10.5665/sleep.4716

3. Kim EJ, Dimsdale JE. The Effect of Psychosocial Stress on Sleep: A Review of Polysomnographic Evidence. Behav Sleep Med. 2007;5(4):256–78. doi:10.1080/15402000701557383 PubMed PMID: 17937582; PubMed Central PMCID: PMC4266573.
4. Azad MC, Fraser K, Rumana N, Abdullah AF, Shahana N, Hanly PJ, et al. Sleep Disturbances among Medical Students: A Global Perspective. J Clin Sleep Med JCSM Off Publ Am Acad Sleep Med. 2015 Jan 15;11(1):69–74. doi:10.5664/jcsm.4370 PubMed PMID: 25515274; PubMed Central PMCID: PMC4265662.
5. Dixit A, Thawani R, Goyal A, Vaney N. Psychomotor Performance of Medical Students: Effect of 24 Hours of Sleep Deprivation. Indian J Psychol Med. 2012;34(2):129–32. doi:10.4103/0253-7176.101777 PubMed PMID: 23162187; PubMed Central PMCID: PMC3498774.
6. Ratcliff R, Van Dongen HPA. Sleep deprivation affects multiple distinct cognitive processes. Psychon Bull Rev. 2009 Aug;16(4):742–51. doi:10.3758/PBR.16.4.742 PubMed PMID: 19648462; PubMed Central PMCID: PMC2797337.
7. Gupta R, Saini LK, Singh M, Pant YK. Waking Up to the Importance of Sleep: Need for a National Sleep Health Policy. J Med Evid. 2024 Mar;5(1):75. doi:10.4103/JME.JME_121_23
8. Shahid A, Wilkinson K, Marcu S, Shapiro CM. Pittsburgh Sleep Quality Index (PSQI). In: Shahid A, Wilkinson K, Marcu S, Shapiro CM, editors. STOP, THAT and One Hundred Other Sleep Scales [Internet]. New York, NY: Springer New York; 2011 [cited 2025 Mar 19]. p. 279–83. Available from: https://link.springer.com/10.1007/978-1-4419-9893-4_67 doi:10.1007/978-1-4419-9893-4_67
9. Srirangaramasamy J, Karthikeyan V, Ramanathan R, Hasan KM A, SY B, Suthar N, et al. Assessment of Physical Activity and Sleep Quality Among Doctors and Medical Students: A Cross-Sectional Study From South India. Cureus. 16(7):e65807. doi:10.7759/cureus.65807 PubMed PMID: 39219980; PubMed Central PMCID: PMC11362709.
10. Kumar VA, Chandrasekaran V, Brahadeeswari H. Prevalence of smartphone addiction and its effects on sleep quality: A cross-sectional study among medical students. Ind Psychiatry J. 2019 Jun;28(1):82. doi:10.4103/ipj.ipj_56_19
11. Hangouche AJE, Jniene A, Aboudrar S, Errguig L, Rkain H, Cherti M, et al. Relationship between poor quality sleep, excessive daytime sleepiness and low academic performance in medical students. Adv Med Educ Pract. 2018 Sep 7;9:631–8. doi:10.2147/AMEP.S162350 PubMed PMID: 30233270; PubMed Central PMCID: PMC6135210.
12. Valladares-Garrido MJ, Morocho-Alburqueque N, Zila-Velasque JP, Solis LAZ, Saldaña-Cumpa HM, Rueda DA, et al. Sleep quality and associated factors in Latin American medical students: a cross-sectional and multicenter study. BMC Public Health. 2025 Feb 24;25:755. doi:10.1186/s12889-025-21569-y PubMed PMID: 39994617; PubMed Central PMCID: PMC11854007.
13. Almojali AI, Almalki SA, Alothman AS, Masuadi EM, Alaqeel MK. The prevalence and association of stress with sleep quality among medical students. J Epidemiol Glob Health. 2017;7(3):169–74. doi:10.1016/j.jegh.2017.04.005 PubMed PMID: 28756825; PubMed Central PMCID: PMC7320447.
14. Shafique Z, Syed F, Naz S, Urooj S, Khan S, Javed S. Assessment of factors affecting the sleep hygiene of medical students in Bahawalpur, Pakistan: a cross-sectional study. Sleep Sci. 2021;14(3):273–9. doi:10.5935/1984-0063.20200063 PubMed PMID: 35186206; PubMed Central PMCID: PMC8848526.
15. Saintila J, Javier-Aliaga D, del Carmen Gálvez-Díaz N, Barreto-Espinoza LA, Buenaño-Cervera NA, Calizaya-Milla YE. Association of sleep hygiene knowledge and physical activity with sleep quality in nursing and medical students: a cross-sectional study. Front Sports Act Living. 2025 Mar 20;7:1453404. doi:10.3389/fspor.2025.1453404 PubMed PMID: 40181932; PubMed Central PMCID: PMC11965603.
16. Santos M, Sirtoli R, Rodrigues R, López-Gil JF, Martínez-Vizcaíno V, Guidoni CM, et al. Relationship between free-time physical activity and sleep quality in Brazilian university students. Sci Rep. 2023 Apr 24;13:6652. doi:10.1038/s41598-023-33851-3 PubMed PMID: 37095143; PubMed Central PMCID: PMC10125990.
17. Alshumrani R, Shalabi B, Sultan A, Wazira L, Almutiri S, Sharkar A. Consumption of energy drinks and their effects on sleep quality among medical students. J Fam Med Prim Care. 2023 Aug;12(8):1609–14. doi:10.4103/jfmpc.jfmpc_1_23 PubMed PMID: 37767430; PubMed Central PMCID: PMC10521823.
18. Zavar Mousavi M, Tamimi A, Farsam M, Kousha M. Substance Abuse and Sleep Quality in University Students. Addict Health. 2024 Feb;16(1):35–41. doi:10.34172/ahj.2024.1445 PubMed PMID: 38651022; PubMed Central PMCID: PMC11032618.

19. Mahfoud Y, Talih F, Streem D, Budur K. Sleep Disorders in Substance Abusers. Psychiatry Edgmont. 2009 Sep;6(9):38–42. PubMed PMID: 19855859; PubMed Central PMCID: PMC2766287.
20. 20. Goel A, Moinuddin A, Tiwari R, Sethi Y, Suhail MK, Mohan A, et al. Effect of Smartphone Use on Sleep in Undergraduate Medical Students: A Cross-Sectional Study. Healthcare. 2023 Nov 2;11(21):2891. doi:10.3390/healthcare11212891 PubMed PMID: 37958035; PubMed Central PMCID: PMC10649238.