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Original Research Paper

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SLEEP PATTERNS AND QUALITY AMONG POST-GRADUATE MEDICAL STUDENTS: IMPACT OF CLINICAL RESPONSIBILITIES AND DEMOGRAPHIC FACTORS

Anuj Dwivedi

ABSTRACT

Background: Sleep is critical in overall health, cognitive functioning, and emotional well-being. Post-graduate medical students often experience sleep disturbances due to demanding academic schedules, clinical responsibilities, and stress. **Aim and Objective:** To evaluate sleep patterns and quality among post-graduate medical students and examine variations based on age, gender, and departmental affiliation. **Materials and Methods:** A cross-sectional study was conducted among post-graduate medical students. Sleep patterns were assessed using self-reported sleep diaries, which recorded parameters such as sleep efficiency, latency, wake after sleep onset, subjective sleep quality, and morning refreshness. Participants were stratified by age, gender, and departmental affiliation (clinical vs. non-clinical). Statistical analyses were performed to compare sleep parameters across groups, with significance set at $p < 0.05$. **Results:** Most participants were aged 25–30 years, with no significant differences in sleep parameters observed among different age groups. Gender-based comparisons revealed slightly better sleep efficiency and subjective sleep quality in females than males, though these differences were not statistically significant. Clinical students demonstrated significantly poorer subjective sleep quality (mean score 2.52 vs. 1.24; $p = 0.006$) and morning refreshness (mean score 2.62 vs. 1.20; $p = 0.003$) than non-clinical students. Sleep efficiency, sleep onset latency, and wake after sleep onset did not significantly differ between the two groups. **Conclusion:** Clinical post-graduate students experience significantly poorer sleep quality and reduced morning refreshness than their non-clinical counterparts, likely due to the demanding nature of clinical training. No significant variations in sleep patterns were observed across age groups or genders. These findings underscore the need for targeted interventions, including work schedule optimization and stress management strategies, to improve this population's sleep health and overall well-being. Future research should explore longitudinal trends and the effectiveness of these interventions.

KEYWORDS : sleep patterns, post-graduate medical students, sleep quality, stress management

INTRODUCTION

Sleep is a fundamental physiological process for physical, mental, and emotional well-being. It is critical in cognitive function, emotional regulation, immune function, and overall health maintenance.[1] Despite its importance, sleep disturbances, and poor sleep quality are increasingly prevalent, particularly among populations with demanding schedules, such as post-graduate students in medical and allied fields.[1,2] The pressures of academic workload, irregular schedules, and clinical responsibilities can disrupt normal sleep patterns, leading to significant consequences for performance, health, and quality of life. 2, 3

Sleep diaries, also known as sleep logs, are a valuable subjective tool for assessing sleep patterns and quality over time.[4,5] They provide detailed information on key parameters, including sleep onset latency, wake after sleep onset, total sleep duration, and subjective sleep quality.[6] These logs are particularly useful for evaluating sleep behaviors in specific populations, as they allow for personalized insights into sleep patterns and can highlight potential disruptions caused by occupational or lifestyle factors. [5,6]

This study aims to assess post-graduate students' sleep patterns and quality using sleep diaries, focusing on variations across age groups, gender, and departmental affiliations (clinical vs. non-clinical). By identifying trends and potential disparities, the study seeks to understand better the impact of demographic and occupational factors on sleep and provide a foundation for targeted interventions to improve sleep health in this population. The findings are expected to contribute to the growing body of literature on sleep health and its implications for performance, well-being, and long-term outcomes in high-stress academic and professional environments.

MATERIALS AND METHODS

This cross-sectional study was conducted among first-year post-graduate students admitted to MGM Medical College, Indore, in 2022. The study included all first-year post-graduate resident doctors and those who provided written informed consent. A total of 199 participants were recruited after excluding those with a history of head injury, severe road traffic accidents, severe illnesses such as cancer or autoimmune diseases, or a previous history of psychiatric illnesses.

Ethical Considerations

The Institutional Ethics Committee of MGM Medical College, Indore, approved the study. Informed consent was obtained from all participants, and confidentiality of personal details was maintained throughout the study. All procedures adhered to ethical guidelines. The present manuscript adheres to STROBE guidelines while writing.

Data Collection

Data was collected using structured questionnaires, observation checklists, and institutional records. Socio-demographic details and profession-related variables such as department (clinical or non-clinical) were recorded. Participants were assessed using sleep logs or diaries to document sleep patterns.

Sleep Logs or Diaries

Sleep logs or diaries were utilized as a subjective measure to assess participants' sleep patterns and quality over a specified period. Participants were instructed to maintain daily records of their sleep behaviors, including bedtime, wake-up time, sleep onset latency (time taken to fall asleep), wakefulness after sleep onset, and subjective sleep quality. Additional parameters such as morning refreshness and total sleep duration were also documented. These logs provided a detailed, individualized account of sleep habits, enabling the analysis of sleep efficiency and identifying potential disruptions. The data collected through the sleep diaries served as a complementary tool alongside objective measures, offering valuable insights into the participants' self-reported sleep experiences and their correlation with demographic, departmental, and gender differences. Standardized instructions were provided to ensure consistency and reliability in the reporting process.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 25. Continuous variables were expressed as mean ± standard deviation and categorical data were presented as numbers

and percentages. Comparisons between clinical and non-clinical groups were made using one-way ANOVA for continuous variables and the Chi-square test for categorical variables. A p-value < 0.05 was considered statistically significant.

RESULTS

Characteristics of the Study Population

The study included 199 post-graduate students, divided into clinical (n=153) and non-clinical (n=46) groups. The mean age of participants was 29.63 ± 2.61 years for the clinical group and 30.33 ± 3.43 years for the non-clinical group, with no statistically significant difference between the groups (p = 0.146). The age distribution showed the majority (70.4%) of participants were in the 25–30 years age group, followed by 31–35 years (25.6%) and 36–40 years (4%). Regarding gender, there were 113 males and 86 females, with no significant difference in gender distribution between clinical and non-clinical groups (p = 0.472).

Table 1: Characteristics Of The Study Population

Characteristics		Departments		Total	P value
		Clinical (n=153)	Non-clinical (n=46)		
Age; years	25-30	110	30	140	0.175
	31-35	39	12	51	
	36-40	4	4	8	
	Mean	29.63±2.608	30.33±3.432		0.146
Sex	Female	64	22	86	0.472
	Male	89	24	113	

Table 2: Means Scores Of Sleep Diary Between Age Groups

Scales	Age; years						P value
	25-30		31-35		36-40		
	Mean	SD	Mean	SD	Mean	SD	
Sleep Efficiency (%)	88.77	8.696	87.71	12.635	89.88	7.279	0.743
Sleep Onset Latency (min)	18.82	15.784	19.14	16.278	18.13	17.308	0.984
Wake After Onset (min)	8.43	15.067	9.51	17.614	3.75	10.607	0.621
Subject ve Sleep Quality	2.17	2.746	2.53	2.859	1.25	2.765	0.439
Morning Refreshness	2.23	2.817	2.63	2.935	1.25	2.765	0.399

Table 2 compares mean scores for various sleep diary parameters across three age groups (25–30 years, 31–35 years, and 36–40 years). Sleep efficiency (%) was similar across the groups, with mean values of 88.77%, 87.71%, and 89.88%, respectively, and no statistically significant difference (p = 0.743). Sleep onset latency (time taken to fall asleep) also showed minimal variation, with mean values of 18.82, 19.14, and 18.13 minutes for the respective age groups, and was not statistically significant (p = 0.984). Wake after sleep onset (duration of wakefulness post-sleep onset) was slightly lower in the 36–40 years group (3.75 minutes) compared to the other groups (8.43 and 9.51 minutes). Still, this difference was not significant (p = 0.621). Subjective sleep quality and morning refreshness scores were also similar across the age groups, with no significant differences (p = 0.439 and p = 0.399, respectively). Overall, the results suggest minimal variation in sleep patterns among the age groups.

Table 3: Comparing Means Scores Of Sleep Diary Between Genders

Scales	Female		Male		P value
	Mean	SD	Mean	SD	
Sleep Efficiency (%)	89.94	7.553	87.48	11.091	0.078
Sleep Onset Latency(min)	18.66	15.462	19.04	16.272	0.870
Wake After Onset(min)	8.78	15.566	8.32	15.664	0.837
Subjective Sleep Quality (0 means best- 8 means worst)	1.85	2.699	2.51	2.807	0.094
Morning Refreshness (0-8)	1.93	2.781	2.57	2.872	0.119

Table 3 compares the mean scores of various sleep diary parameters between females and males. Sleep efficiency (%) was slightly higher in females (mean = 89.94%) compared to males (mean = 87.48%), though this difference was not statistically significant (p = 0.078). Sleep onset latency (time taken to fall asleep) was similar between genders, with females reporting a mean of 18.66 minutes and males 19.04 minutes (p = 0.870). The duration of wakefulness after sleep onset was also comparable, with mean values of 8.78 minutes for females and 8.32 minutes for males (p = 0.837). Subjective sleep quality scores (on a scale where 0 represents the best and 8 the worst) indicated slightly better quality in females (mean = 1.85) compared to males (mean = 2.51). However, the difference was not statistically significant (p = 0.094). Morning refreshness scores (0–8, where 0 represents the best) followed a similar trend, with females reporting slightly better scores (mean = 1.93) compared to males (mean = 2.57), but this difference was also not significant (p = 0.119). Overall, the results indicate no significant gender-based differences in the sleep diary parameters.

Figure 4: Comparing Means Scores Of Sleep Diary Between Genders Table 13: Comparing Sleep Diary With Department

Sleep diary	Clinical		Non-clinical		P value
	Mean	SD	Mean	SD	
Sleep Efficiency (%)	87.84	9.842	90.87	9.277	0.065
Sleep Onset Latency(min)	18.80	15.584	19.13	17.039	0.901
Wake After Onset(min)	10.23	16.676	2.83	9.289	0.004
Subjective Sleep Quality(0 means best-8means worst)	2.52	2.843	1.24	2.292	0.006
Morning Refreshness (0-8)	2.62	2.930	1.20	2.237	0.003

The comparisons of sleep diary parameters between clinical and non-clinical departments reveal notable differences (Table 4). Sleep efficiency (%) was slightly higher in the non-clinical group (mean = 90.87%) compared to the clinical group (mean = 87.84%), but this difference was not statistically significant (p = 0.065). Sleep onset latency (time taken to fall asleep) was almost identical between the two groups, with means of 18.80 minutes (clinical) and 19.13 minutes (non-clinical), showing no significant difference (p = 0.901). However, the duration of wakefulness after sleep onset was significantly lower in the non-clinical group (mean = 2.83 minutes) compared to the clinical group (mean = 10.23 minutes; p = 0.004). Subjective sleep quality (measured on a scale where 0 is the best and 8 is the worst) was significantly better in the non-clinical group (mean = 1.24) compared to the clinical group (mean = 2.52; p = 0.006). Similarly, morning refreshness scores (0–8, with 0 being the best) were also significantly better in the non-clinical group (mean = 1.20) than the clinical group (mean = 2.62; p = 0.003). These findings suggest that individuals in non-clinical departments have better sleep quality and refreshness than their clinical counterparts.

DISCUSSION

Our study highlights notable insights into the sleep patterns, stress levels, and quality of life among medical-education post-graduate students, with specific attention to differences across age groups, genders, and departmental affiliations. Consistent with previous research, our findings reveal that post-graduate students predominantly fall within the age range of 25–30 years, aligning with the observations of Oberoi

et al.[7], Adikane et al.[8], and Chhasatia and Kataria [9]. This demographic trend reflects the progression from undergraduate medical education to post-graduate training, which typically begins in the mid-20s following the completion of mandatory rural service and other prerequisites.

Our results showed no significant differences in sleep efficiency, sleep onset latency, wake after sleep onset, subjective sleep quality, or morning refreshness among different age groups. This aligns with the findings of Oberoi et al. [7] and Ng et al. [10], who reported similar sleep patterns and quality across age groups among post-graduate students and resident doctors. These consistent observations suggest that age does not significantly influence sleep metrics within this population.

Gender differences were observed in sleep diary parameters, with females showing slightly better sleep efficiency and subjective sleep quality than males, although these differences were not statistically significant. This aligns with the findings of Hussein et al. [11] and Tellur et al. [12], which suggest that while gender differences in sleep quality may exist, they are often subtle and influenced by multiple factors, including stress and occupational demands.

Significant differences were observed between clinical and non-clinical students. Clinical students reported poorer sleep quality (mean subjective sleep quality score 2.52 vs. 1.24; $p = 0.006$) and reduced morning refreshness (mean score 2.62 vs. 1.20; $p = 0.003$) compared to non-clinical students. These findings are consistent with the results of Tellur et al. [12], Adikane et al. [8], and Mendes-Rodrigues et al. [13], which highlight the adverse impact of demanding clinical rotations, irregular work schedules, and the emotional burden of patient care on sleep patterns and quality. Clinical students often face disruptions in sleep due to extended working hours, night shifts, and the high-pressure environment of clinical training.

The significant disparities in sleep patterns and quality between clinical and non-clinical students underscore the need for targeted interventions to address the specific challenges faced by clinical students. Strategies such as optimizing work schedules, providing mental health support, and promoting healthy sleep practices could mitigate these issues and improve the overall well-being of this group.

Overall, the findings of our study align with existing literature and provide further evidence of the unique challenges faced by post-graduate medical students, particularly those in clinical fields. Addressing these challenges through tailored support systems and institutional policies is essential to enhance post-graduate students' sleep quality, mental health, and academic performance.

CONCLUSION

This study highlights the significant impact of clinical training on the sleep quality and well-being of post-graduate medical students, with clinical students reporting poorer sleep quality and morning refreshness than their non-clinical counterparts. While no significant differences in sleep parameters were observed across age groups or genders, the findings emphasize clinical students' unique challenges due to demanding schedules and high-pressure responsibilities. These results underscore the need for targeted interventions, such as optimized work schedules and stress management programs, to improve this population's sleep health and overall well-being. Future research should explore longitudinal outcomes and evaluate the effectiveness of such interventions to support the mental health and academic performance of post-graduate medical students.

REFERENCES

1. Vandekerckhove M, Wang YL. Emotion, emotion regulation, and sleep: An intimate relationship. AIMS Neurosci. 2017 Dec 1;5(1):1-17. doi: 10.3934/Neuroscience.2018.1.1.
2. Ramar K, Malhotra RK, Carden KA, et al. Sleep is essential to health: an American Academy of Sleep Medicine position statement. J Clin Sleep Med. 2021;17(10):2115–2119.
3. Mukherjee U, Sehar U, Brownell M, Reddy PH. Mechanisms, consequences, and role of interventions for sleep deprivation: Focus on mild cognitive impairment and Alzheimer's disease in elderly. Ageing Research Reviews. 2024;100:102457. doi:10.1016/j.arr.2024.102457.
4. Carney CE, Buysse DJ, Ancoli-Israel S, Edinger JD, Krystal AD, Lichstein KL, Morin CM. The consensus sleep diary: standardizing prospective sleep self-monitoring. Sleep. 2012 Feb 1;35(2):287-302. doi: 10.5665/sleep.1642.
5. Dietch JR, Sethi K, Slavish DC, Taylor DJ. Validity of two retrospective questionnaire versions of the Consensus Sleep Diary: the whole week and split week Self-Assessment of Sleep Surveys. Sleep Medicine. 2019;63:127-136. doi:10.1016/j.sleep.2019.05.015.
6. Adikane H, Kaware A, Thakre S. Stress among medical students of a tertiary health care centre in tribal area of central India: A prospective observational study. Int J Community Med Public Health. 2018;5(7):3084–9.
7. Oberoi S, Bansal PD, Saini S, Dhiman R, Garg P. Assessment Of Psychiatric Morbidity Among Post Graduate Medical Students In Ggs Medical College, Faridkot–A Cross-Sectional Study. NeuroQuantology. 2023;21(3):26.
8. Adikane H, Kaware A, Thakre S. Stress among medical students of a tertiary health care centre in tribal area of central India: A prospective observational study. Int J Community Med Public Health. 2018;5(7):3084–9.
9. Chhasatia AH, Kataria LR. Measuring Anger in Medical, Dental, and Paramedical Post-graduate Students of Sumandeep Vidyapeeth, Vadodara, Gujarat, India: A Cross-Sectional Study. International Neuropsychiatric Disease Journal. Published online July 31, 2021:17-24. doi:10.9734/indj/2021/v16i230170
10. Ng APP, Chin WY, Wan EYF, Chen J, Lau CS. Health-related quality of life in Hong Kong physicians up to 20 years postgraduation: A cross-sectional survey. Plos One. 2023;18(4):e0284253.
11. Hussein OM, Zainal NZ, Latif MA. Prevalence of Stress among International Post-graduate Doctors at the University Malaya Medical Centre (UMMC), Kuala Lumpur. J Clin Diagn Res. 2012;6(5):859–62.
12. Tellur, L., Yadavannavar, M. C., Sorganvi, V., & Patil, S. (2022). Stress among doctors doing residency: a cross-sectional study at a tertiary care hospital in Vijayapura, Karnataka. International Journal Of Community Medicine And Public Health, 9(3), 1505–1509. https://doi.org/10.18203/2394-6040.ijcmph20220720.
13. Mendes-Rodrigues C, Ranal MA, Carvalho DV. Post-graduate Students: An Alert about Quality of Life. World J Educ. 2019;9(1):135–44.