



Quantity and Quality of Sleep among Medical and Paramedical Students: A Comprehensive Study and Analysis

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Abstract

Introduction: Sleep plays a crucial role in maintaining cognitive function and overall well-being, particularly among medical and paramedical students who face unique stressors impacting their sleep patterns and academic performance. Understanding the sleep quality of these students is essential for addressing potential issues and promoting their overall health and academic success. **Aim:** This study aimed to comprehensively evaluate the sleep quality of undergraduate medical and physiotherapy students from an urban tertiary health care center using the Pittsburgh Sleep Quality Index (PSQI). **Methodology:** A total of 294 students participated in the study, including 226 MBBS and 68 Physiotherapy students, all of whom were females. The PSQI was utilized to assess various components of sleep quality among the participants. Data analysis involved examining sleep latency, duration, efficiency, disturbances, daytime dysfunction, and overall sleep quality. Comparative studies worldwide were also referenced to contextualize the findings. **Results:** The study revealed that 31.3% of participants experienced poor sleep quality, with 34.51% of MBBS and 21% of Physiotherapy students exhibiting significant sleep disturbances. Gender-wise, 30 male MBBS students, 48 female MBBS students, and 14 female physiotherapy students experienced poor sleep quality. Analysis of PSQI components highlighted varying sleep patterns among students, emphasizing challenges such as sleep latency, duration, efficiency, disturbances, and daytime dysfunction. Comparative studies conducted worldwide supported the high prevalence rates of poor sleep quality among medical students. Contributing factors identified included academic stress, disrupted learning styles, and increased exam pressures. **Conclusion:** The findings underscore the critical need for interventions to address sleep quality issues among medical and paramedical students, with the goal of enhancing their well-being and academic performance. Further research is recommended to explore additional factors influencing sleep quality in this demographic, paving the way for more targeted interventions and support systems. Recognizing the significance of sleep quality in student populations is paramount for fostering their holistic development and success in academic pursuits.

Keywords: Sleep quality, undergraduate students, medical education, physiotherapy education, Pittsburgh Sleep Quality Index (PSQI), academic performance, cognitive function

Introduction

Sleep is a dynamic and vital physiological process, characterized by a temporary and reversible state of altered consciousness. During this state, individuals experience diminished responsiveness to cortical functions, allowing them to be easily awakened by sensory or other external stimuli [1]. More than just a passive state of rest, sleep serves as an active mechanism that initiates the withdrawal of the brain from its waking state. This complex physiological process holds immense importance due to its multifaceted impact on neuronal and metabolic functions. Sleep contributes to neuronal maturation, the preservation of synaptic plasticity, the consolidation of memories and learning, and the enhancement of cognitive abilities. It also acts as a restorative mechanism, facilitating healing and repair, boosting immunity, and triggering the release of crucial hormones like Growth hormone, Testosterone, Melatonin, Prolactin, and Anti-diuretic Hormone. Ultimately, sleep aids in maintaining homeostatic balance within the body [2]. The significance of sleep, both in terms of its quality and quantity, extends far beyond personal

well-being it profoundly influences an individual's overall growth and performance. This becomes particularly evident in the case of medical and paramedical students, who face a myriad of unique stressors and challenges. Research has shown that poor quality and quantity of sleep is associated with premature mortality and various adverse health outcomes like cardiovascular diseases, immune system suppression, obesity, and migraine [3,4]. From the moment medical and paramedical students enter their professional institutes, they are subjected to relentless stressors. These include the constant pressure of demanding academic workloads and goals, rigorous schedules comprising theory and practical sessions, the anxiety associated with examinations, peer competition, the abrupt separation from family, especially in hostels, and a notable shift in the style of education from the more guided approach of secondary schools to a pedagogical and self-paced pattern of learning. Consequently, it is common for medical and paramedical students to develop disrupted sleep patterns and habits, which can detrimentally affect their academic performance [5].

Research has consistently shown that sleep disturbances adversely affect the academic performance and lifestyles of medical students [6]. This global phenomenon has been highlighted in studies from various regions, with prevalence rates ranging from 41% of participating students in Iran, 70% in Hong Kong to as high as 90% in China [7]. Research conducted across various countries highlights this issue: for instance, 30% of students in Korea, and 49% in Taiwan sleep less than 7 hours per night [8,9]. Insufficient sleep negatively impacts the academic performance of many students, a factor often underestimated by the students themselves [10]. Studies in developing nations indicate that between 32.5% to 76% of medical students experience poor sleep quality [11]. Studies from Nepal found that poor sleep quality affected 44.2% of individuals, with rates of 30.3% among medical students and 35.4% among undergraduate non-medical students. Furthermore, research indicates a higher occurrence of poor sleep quality among medical students compared to both non-medical students and the general population [12]. This problem has been the subject of extensive research, and findings consistently reveal a higher prevalence of poor sleep quality among medical students compared to non-medical students and the general population. Several factors contribute to this phenomenon, including the attitudes of medical students, their knowledge of sleep, and the demanding nature of their academic curriculum. Furthermore, sleep deprivation can have severe consequences, including an increased risk of depression, suicidal tendencies, and substance abuse, particularly among adolescents [7].

This comprehensive study was undertaken to address these concerns and gain a deeper understanding of the sleep patterns and prevalence of poor sleep quality among medical and paramedical students. Since, sleep is a complex and indispensable physiological process with far-reaching implications for cognitive and physical well-being. Its importance is particularly pronounced in the lives of medical and paramedical students who grapple with unique academic and personal challenges. Poor sleep quality is a prevalent issue among these students, with potentially detrimental effects on their academic performance and overall lifestyles. The application of the Pittsburgh Sleep Quality Index (PSQI) in this study provides valuable insights into the sleep patterns and the prevalence of poor sleep quality within this demographic. Understanding these aspects is essential for the development of targeted interventions and strategies aimed at enhancing sleep quality and the overall well-being of medical and paramedical students.

Methodology

Study design and setting: The present study is a descriptive cross-sectional questionnaire-based study, involving undergraduate medical First-year and physiotherapy First-year students from a tertiary healthcare center in an urban setting.

Study population: The study participants were selected randomly from undergraduate medical and paramedical students First year

Distribution of study subjects as per the field of the student:

Field-wise distribution of students	Frequency	Percent (%)
MBBS Students (Males & Females)	226	76.9
Physiotherapy Students (All females)	68	23.1
Total	294	100.0

Frequency distribution of study subjects as per Global Pittsburgh scale.

The prevalence of poor sleep quality among all students was found to be 92 (31.3%) with Global Pittsburgh Scale more than 5.

Students	Score for various sleep scales	Frequency	Percent (%)	
All Students (Males & Females)	Global Pittsburgh scale	No significant sleep disturbance	202	68.7
		Significant sleep disturbance (More than 5)	92	31.3

studying in the tertiary healthcare center. The participation was entirely voluntary and contingent upon the signing of written informed consent. Assurance was given to the students that their participation or no participation would not affect their grades or attendance in the Academic year. Ethical clearance from the Institutional Ethical Committee was obtained.

Sampling: The required number of participants for the study was calculated by using the formula: $n = z^2pq/d^2$ with the following assumptions: margin of error 5%, at 95% Confidence Interval (CI), and taking the prevalence of poor sleep quality (p):44.23% [12]. After adding a 30% nonresponse rate, the final calculated sample size was 294.

Study Tool: The primary tool employed for this study was the Pittsburgh Sleep Quality Index (PSQI). The students were provided with comprehensive explanations of the Pittsburgh Sleep Quality Index.

This self-report questionnaire is designed to assess sleep quality and quantity over a one-month timeframe. Comprising 19 individual items, the PSQI organizes responses into seven components, ultimately yielding a single global score. Administering the PSQI is a relatively quick process, typically taking between 5 to 10 minutes [13].

Developed by Daniel J. Buysse and his collaborators, the PSQI is a comprehensive tool for assessing sleep quality. It evaluates various dimensions of sleep, including subjective sleep quality, sleep latency (the time it takes to fall asleep), sleep duration, habitual sleep efficiency (the percentage of time spent asleep while in bed), sleep disturbances, use of sleeping medication, and daytime dysfunction. Each item within these components is rated on a scale of 0 to 3. The global PSQI score is then calculated by summing the seven component scores, resulting in an overall score ranging from 0 to 21, with lower scores indicating better sleep quality. Importantly, a global score of 5 or higher is indicative of poor sleep quality and the possible presence of sleep disturbances.

Data collection spanned two months, occurring in August and September 2019. The PSQI questionnaire was utilized for data collection and subsequent scoring, facilitated by PSQI Microsoft Access database software.

Results

The data was gathered and entered in an MS Excel spreadsheet. Data was analyzed using SPSS version 26. Data analysis was carried out using Descriptive statistics and other relevant tests of significance. The p-value was set at 0.05 to be significant and the p-value less than 0.01 was considered as highly significant. The confidence level was set at 95% and the power of the study was fixed at 80%.

Distribution of study participants based on gender, field of study, and the sleep scale (PSQI) are presented in form of tables and required graphs.

Further depending on the branch, the poor sleep quality among MBBS students is 78 (34.51%) while that of Physiotherapy is 14(21%) with all female candidates

MBBS students	Global Pittsburgh scale	No significant sleep disturbance	148	65.48
		Significant sleep disturbance (more than 5)	78	34.51
Physiotherapy Students (All females)	Global Pittsburgh scale	No significant sleep disturbance	54	79
		Significant sleep disturbance (more than 5)	14	21

Out of the 78 MBBS Students with poor sleep quality, the gender wise distribution is as follows, 30 and 48 females have recorded poor sleep quality

Chi square test showing the frequency distribution and difference in the PSQI score of all of the MBBS students.

Variable		PSQI Score		Total	Chi square value	P value
		No significant sleep disturbance	Significant sleep disturbance			
MBBS Students	Male	48	30	78	0.411	0.522 (NS)
	Female	100	48	148		
Total		148	78	226		

*p<0.05 is statistically significant, NS= not significant, Chi square test applied

It can be seen from the above table, that there is no significant difference in the PQSI scores of the male and female MBBS students.

Component 1: Subjective sleep quality - question 9

Overall Sleep Quality	MBBS Males (78)	MBBS females (148)	Physiotherapy Females (68)	Total (294)
Very good	6 (7.7 %)	16 (4 %)	36	58 (19.7%)
Fairly good	28 (35.9 %)	58 (8 %)	24	110 (37.4%)
Fairly bad	34 (43.6%)	38 (20.3 %)	6	78 (27%)
Very bad	10 (13 %)	36 (17.6 %)	2	48 (16.3%)

Component 2: Sleep latency - questions 2 and 5a

Sleep latency	MBBS Males (78)	MBBS females (148)	Physiotherapy Females (68)	Total (294)
≤ 15 min	12 (7.7 %)	56 (30.5 %)	38	72 (24.4 %)
16 to 30 min	30 (38.46 %)	50 (34.25 %)	24	104 (35.37 %)
31 to 60 min	32 (41 %)	34 (17.59 %)	4	70 (23.8 %)
> 60 min	10 (12.8 %)	36 (17.59 %)	2	48 (16.3 %)

Component 3: Sleep duration - question 4

Sleep duration	MBBS Males (78)	MBBS females (148)	Physiotherapy Females (68)	Total (294)
>7 hrs	12 (15.38 %)	32 (27.7%)	28	72 (24.48 %)
6-7 hrs	32 (41.02 %)	56 (36.1 %)	22	110 (37.41 %)
5-6 hrs	18 (23.07 %)	38 (24.07%)	14	70 (23.8 %)
<5 hrs	16 (20.5%)	22 (12.03 %)	14	42 (14.28 %)

Component 4: Sleep efficiency - questions 1, 3, and 4

Habitual Sleep Efficacy	MBBS Males (78)	MBBS females (148)	Physiotherapy Females (68)	Total (294)
>85	12 (15.38 %)	36 (25.9 %)	20	68 (23.12 %)
75-84	32 (41.02 %)	52 (37.03 %)	28	112 (38.09 %)
65-74	22 (28.20 %)	34 (22.22 %)	14	70 (23.8 %)
<65	12 (15.38 %)	26 (14.81 %)	06	44 (14.96 %)

Habitual sleep efficacy refers to the efficiency of your sleep patterns over an extended period. It's calculated by dividing the time you spend asleep by the total time spent in bed, then multiplying the result by 100 to get a percentage.

The formula for habitual sleep efficacy is: Habitual Sleep Efficacy = (Total Time A Sleep Total Time in Bed) ×100
Habitual Sleep Efficacy= (Total Time in Bed Total Time Asleep) ×100

An efficacy above 85% is generally considered good, indicating efficient sleep

Component 5: Sleep disturbance - questions 5b-5j

Sleep Disturbances	MBBS Males (78)	MBBS females (148)	Physiotherapy Females (68)	Total (294)
0	2 (2.56 %)	12 (13.88 %)	18	32 (10.88 %)
1 to 9	50 (64.10 %)	82 (55.55 %)	38	170 (57.82 %)
10 to 18	22 (28.2 %)	38 (23.14 %)	12	72 (24.48 %)
19 to 27	4 (5.13%)	16 (7.4 %)	0	20 (6.8 %)

Wake up in the middle of the night or early morning C. Have to get up to use the bathroom D. Cannot breathe comfortably E. Cough or snore loudly F. Feel too cold G. Feel too hot H. Have bad dreams I.

Have pain- Understanding and addressing these issues can be crucial in improving sleep quality and overall well-being.

Component 6: Use of sleep medication - question 6

Over-the-counter sleep medications	MBBS Males (78)	MBBS females (148)	Physiotherapy Females (68)	Total (294)
Not during the past month	78 (100 %)	146 (99.07 %)	68	290 (98.63 %)
Less than once a week	0	2 (0.92 %)	0	2 (0.68 %)
Once or twice a week	0	2 (0.92 %)	0	2 (0.68 %)
Three or more times a week	0	0 0 %	0	0 (0 %)

Component 7: Daytime dysfunction - questions 7 and 8

Day time dysfunction	MBBS Males (78)	MBBS females (148)	Physiotherapy Females (68)	Total (294)
0	28 (36 %)	48 (40.74 %)	40	116 (39.45 %)
1 to 2	40 (51.28 %)	92 (52.77 %)	22	154(52.38 %)
3 to 4	10 (12.82 %)	6 (5.55 %)	6	22 (7.48 %)
5 to 6	0 (0 %)	2 (0.92 %)	0	2 (0.68 %)

The data collected for this study was organized and entered into an MS Excel spreadsheet, and subsequent analysis was conducted using SPSS version 26. The analysis encompassed descriptive statistics and relevant tests of significance, with a predefined significance level of 0.05. A p-value of less than 0.01 was considered highly significant. The study's confidence level was set at 95%, and the study's power was established at 80%. The distribution of study participants based on age, gender, field of study, and the Pittsburgh Sleep Quality Index (PSQI) scores were presented in tabular and graphical formats. Distribution of Study Participants by Field of Study: The study included 294 participants, with 226 (76.9%) enrolled in the MBBS program and 34 (23.1%) in the Physiotherapy program, all of whom were female. Gender-wise distribution among MBBS students revealed that 69.2% of males were 18 years old, while 55.4% of females were 18 years old. In the Physiotherapy program, 79% of females were 18 years old. Frequency Distribution of Study Subjects by Global Pittsburgh Scale (PSQI): The prevalence of poor sleep quality, defined as a Global Pittsburgh Scale score exceeding 5, was found to be 31.3% among all students. When examining sleep quality by program, 34.51% of MBBS students and 21% of Physiotherapy students (all female) experienced significant sleep disturbances. Frequency Distribution of Study Subjects by Global Pittsburgh Scale (PSQI) and Gender: Among the 78 MBBS students with poor sleep quality, 30 were males, and 48 were females. Chi-Square Test Results for MBBS Students: A chi-square test was conducted to assess the differences in PSQI scores between male and female MBBS students. The results showed no significant difference in PSQI scores between the two gender groups (p = 0.522). Analysis of PSQI Components: The data

was further analyzed based on the seven components of the Pittsburgh Sleep Quality Index (PSQI):

Component 1: Subjective Sleep Quality (Question 9): Most students reported very good (19.7%) or fairly good (37.4%) sleep quality while 27 % & 16.3 % reported fairly bad and very bad sleep quality respectively.

Component 2: Sleep Latency (Questions 2 and 5a) :24.4 % of students had sleep latency less than 15 mins. The majority of students had a sleep latency of 16 to 30 minutes (35.37%). Almost 23.8 % of students had sleep latency between 31 to 60 min. Almost 16.3 % of students had sleep latency of more than 60 minutes

Component 3: Sleep Duration (Question 4): 24.48 % slept for more than 7 hours while almost 23.8 % slept for 5-6 hours and 14.28 % slept for less than 5 hours

Component 4: Sleep Efficiency (Questions 1, 3, and 4): 23.12 % of students had habitual sleep efficacy of >85 while 14.96 % of students had habitual sleep efficacy of < 65

Component 5: Sleep Disturbances (Questions 5b-5j): 57.82 % of students had Sleep disturbance between 1-9 while only 6.8 % of students had Sleep disturbance between 19-27

Component 6: Use of Sleep Medication (Question 6): The majority of students (98.63%) reported not using over-the-counter sleep medications in the past month.

Component 7: Daytime Dysfunction (Questions 7 and 8): 39.45 % of students had no day time dysfunction while only 0.68 % of students had 5-6 day time dysfunctions

In summary, the analysis of the Pittsburgh Sleep Quality Index (PSQI) data revealed that a significant proportion of students experienced poor sleep quality. The study found no significant gender differences in sleep quality among MBBS students. Additionally, various components of sleep quality, such as subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction, were examined to provide a comprehensive understanding of the sleep patterns among the study participants. These findings highlight the need for interventions to improve sleep quality among students and address any associated issues.

Discussion

Restorative sleep is fundamental for overall well-being, as it rejuvenates the body, mind, and spirit [14]. Poor sleep quality and sleep deficiencies have been associated with reduced workplace performance, impaired decision-making, medical errors, personal health challenges, and burnout [15]. The experts on sleep quality agreed that certain factors like how long it takes to fall asleep, waking up multiple times for more than five minutes, time spent awake after falling asleep, and how well you sleep overall can show how good your sleep is throughout your life [16]. Another study by Buxton and colleagues [17] in 2009 highlighted that getting enough sleep for the right amount of time and making sure it's good quality are important parts of having good sleep habits. In specific groups like students studying health, healthcare workers, and emergency staff, not sleeping well and having sleep problems have been connected to doing work less effectively, making bad choices, making mistakes in medical care, facing personal health issues, and feeling really tired and stressed out [18].

In our study, we discovered that 92 (31.3%) of all participants (including First year MBBS and First year Physiotherapy students) had poor sleep quality, as indicated by a Global Pittsburgh Scale score exceeding 5. When examining specific branches, we found that 78 (34.51%) of MBBS students experienced poor sleep quality, while only 14 (21%) of Physiotherapy students, who were all female, had similar issues. Among the 78 MBBS students with poor sleep quality, 20 were male, and 48 were female. Our findings align with a study by Kiran Paudel et al. [19], which reported a 38.2% prevalence of poor sleep quality among undergraduate medical students, higher than the 35.4% found among non-medical students. A similar study done at a private medical college in Nepal found 44.3% medical students having trouble sleeping compared to the group in our study [12]. The prevalence of poor sleep quality in our study is comparable with other studies conducted in different countries such as Thailand (42.4%) [20] while lower than in Nigeria 50.1% [21], Sudan 61.4% [22], and Saudi Arab (76%) [11]. Medical students typically exhibit poorer sleep quality compared to students in other fields due to heightened academic stress and demanding schedules, particularly the rigors of theory-practical learning and exam schedules. Furthermore, our study revealed a female predominance in poor sleep quality in both First year MBBS (48) and First year Physiotherapy (14) branches compared to males (30). This aligns with some studies but contrasts with others, such as Camila de Castro Corrêa et al.'s research, [23] which showed a male predominance, and Del Pielago Meoño AF and Cardoso HC, Bueno FC's studies [24] which reported higher male prevalence rates with poor sleep quality. Approximately 43% of our study participants reported fairly bad or very bad sleep quality, reflecting the challenges faced by first-year medical graduates due to shifts in learning styles, academic stress, and demanding work schedules. This proportion is lower than the studies done by Rique GL et al [25] where the proportions were as high as 61.5 %. The study

by Corrêa CC et al [23] have highlighted the correlation of poor sleep quality with the incoming first year batch of medical students and associated factors such as Internet surfing at night, poor social life, and bad eating habits, sudden drift from the safe homely environment to the high demanding medical field to its contribution. Moreover, poor sleep quality was associated with daytime dysfunction, with approximately 12.82% of males and 7.8 % of females reporting impaired daytime functioning in our study. Similar study by Corrêa CC et al [23] have shown 36.9% of the medical students who had difficulty staying awake during the day at least once a week. This finding is consistent with the literature, although there are variations across studies in the proportion of medical students reporting daytime sleepiness: 42.1% [25], 63% [26]. The incoming fresh Candidates of First year in both medical and paramedical fields experience a big change. They switch from preparing for college entrance exams or finishing high school to starting their professional medical college studies. This shift means a lot of academic work and an unpredictable schedule with classes, breaks, and study times. Plus, studying medicine needs a lot of dedication and selflessness. This can lead to unhealthy lifestyle changes like not getting enough sleep and having bad sleep habits [8]. As students get into their second year, they might adjust better to their schedule and studies. Our study also found that 16.3% of all students experienced sleep latency of 60 minutes or longer. This aligns with Rajiv Kumar Singh's research [27], which found that 33% of their students took more than 30 minutes to fall asleep. Higher percentages of sleep latency were reported in a study of medical students in Jordan (48%) [28]. In our study, the largest group of students (41.02%) reported sleeping for 6-7 hours. 24.48 % slept for more than 7 hours while almost 23.8 % slept for 5-6 hours and 14.28 % slept for less than 5 hours. These findings are in line with other studies conducted in Taipei and Malaysia [29]. Sleep efficiency measures the quality of sleep by comparing total hours in bed to actual hours of sleep. Approximately 23% of our study population achieved excellent sleep efficiency scores (>85%), while 15% had lower scores (<65%). Most students (41.02%) had a sleep efficiency score of 75-84. In addition, around 6.8 % of students had sleep disturbances in the form of waking up in the middle of the night or early morning, Having to get up to use the bathroom, not breathing comfortably, coughing or snoring loudly, Feeling too cold, Feel too hot, Having bad dreams or having pain. The deranged lifestyle of medical students, characterized by constant stress and anxiety, likely contributes to these sleep patterns. Also none of the students were on any over-the-counter medications for a considerable period. However, studies by Al Sayed AA et al [29] reported almost 17 % students taking sleep-inducing medications in their studies.

The findings from our study underscore the paramount importance of restorative sleep for overall well-being, emphasizing its role in rejuvenating the body, mind, and spirit [14]. Consistent with existing research, poor sleep quality and deficiencies have been closely linked to reduced workplace performance, compromised decision-making abilities, medical errors, personal health challenges, and the prevalence of burnout [15]. Our study revealed that a significant proportion of participants, particularly in the first-year MBBS and Physiotherapy cohorts, experienced poor sleep quality. This aligns with other research highlighting the prevalence of poor sleep among medical students compared to those in non-medical fields, often attributed to heightened academic stress and demanding schedules [19-22]. Notably, our findings indicated a female predominance in poor sleep quality, which contrasts with some studies while aligning with others [32,33]. A substantial percentage of participants reported fairly or very bad sleep quality, reflecting the challenges encountered by first-year medical students due to shifting learning styles, academic pressures, and demanding schedules. However, our observed proportions were comparatively lower than in certain other studies [26]. Factors contributing to poor sleep quality in medical students, including internet use at night, limited social

interactions, and dietary habits, were highlighted, emphasizing the abrupt transition from familiar environments to rigorous medical studies [23]. Moreover, our study highlighted associations between poor sleep quality and daytime dysfunction, a concern impacting both males and females. The challenges faced by incoming first-year students, characterized by drastic shifts in routines and rigorous academic demands, likely contribute to these patterns [23]. Additionally, findings related to sleep latency, sleep duration, and sleep disturbances mirrored patterns observed in similar international studies, shedding light on sleep efficiency and disruptions experienced by medical students [27-28]. It's noteworthy that none of the participants in our study reported using over-the-counter sleep medications for an extended duration, differing from findings in other studies where a considerable percentage of students resorted to such medications [29].

In conclusion, our study highlights the pressing need for interventions aimed at promoting better sleep hygiene and addressing the challenges faced by medical students, particularly in their initial years. Strategies to support healthy sleep patterns, reduce academic stress, and enhance overall well-being are crucial for fostering a conducive learning environment in medical education. Further research exploring effective interventions for improving sleep quality among students in demanding academic settings remains imperative.

Ethical approval

There is no ethical issue.

Limitation in the study

The sample size is less however there is more scope of research provided the study is undertaken on a large scale.

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Conflict of Interest

We have no conflict of interest to declare

Author contribution

PDW conceived and designed the study, conducted research, provided research materials, and collected and organized data. RA analyzed and interpreted data.

PDW wrote initial and final draft of article, and provided logistic support.

All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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