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Poor sleep and its deprivation factors in medical students: A comparative cross sectional study between hostelites and day scholar

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Abstract

INTRODUCTION: Medical students carry a large academic load which could potentially contribute to poor sleep quality, particularly, students living in hostels face many problems which affect their sleep quality, academic records, personal health, and long-term professional capacities.

OBJECTIVES: To determine the frequency and factors affecting normal sleep pattern and compare the poor sleep cycle among hostelites and day scholars.

METHODOLOGY: A comparative cross-sectional study was conducted among students of medical college of Peshawar, from 1st -30th January 2023. The students mean aged 21±1.6 years were included in the study, whereas students with any psychotic disease were excluded. A total of 284 out of 500 from 2nd to 5th year MBBS students filled out the questionnaire as well as the Pittsburgh sleep quality index scale (PSQI). SPSS v25 was used to analyze the data.

RESULTS: There were 284 students in the study, including 142 hostilities and 142 day scholars. Overall, (92.2%) of students reported disrupted sleep, including (55.6%) hostilities and (36.6%) day scholars. Hostel students had significantly higher PSQI values, indicating poorer sleep quality (p = 0.001). Sleep disturbances, such as later bedtime (12:00-3:00am), early rise-time (6:00-8:00am), shorter sleep (45 min-1hr:30 min), non-cooperation from roommates (81.7%), less daily exercise (23.24%), academic stress (51.41%), and being more prone to depression (57.4%) and tiredness (78.9%) and usage of social media at night (73.24%)

than day scholars, were reported by a larger proportion of hostilities. However, no gender differences were found.

CONCLUSION: Sleep pattern was found disturbed among hostilities as compare to day scholar and are susceptible to sleep issues.

Keywords: Sleep quality; medical students**;** hostelites**;** day scholars; sleep deprivation factors

Introduction

Sleep is defined as a cyclical state of rest and restoration during which consciousness of the surrounding world is halted. Maintenance of optimal health and homeostasis is largely dependent upon the cognitive, reparative and regenerative processes that accompany sleep [1]. Sleep quality among college students is an area of particular interest. Optimal sleep quantity, quality, regularity and phase scheduling are significant and independent predictors of academic performance [2]. Little doubt exists among health professionals about the Fundamental importance of sufficient, restorative sleep in maintaining one's physical and mental health. Troubled sleep is considered both a predictive sign and symptom of many Illnesses, and is associated with substantial decrements in the Quality of life. Briefly, chronic sleep disturbances are associated with an increased risk of work absenteeism and accidents [3] .The pattern of sleep one experiences in a 24-hour period directly correlates with physical health, mood, and mental functioning [4, 5]. Increasing public knowledge of the positive effects of adequate sleep and increasing the proportion of adults who obtain sufficient amounts of sleep to improve health, wellness, productivity, quality of life and public safety is a national health objective reflected in healthy people 2020 [6]. The amount of sleep an individual need may vary from person to person or from age to age but mostly an individual needs to sleep for at least 7-8 hours daily to feel alert and well-rested [7]. A study was conducted in Pakistan in 2018 on comparison of quality sleep between medical and non-medical undergraduate students, on 606 students out of which 520 (85.8%) students responded. Among them 266 (51.1%) were medical students and 254 (48.9%) were non-medical. Results showed that among the medical students 179 (67.3%) and among non-medical 128 (50.4%) subjects were classified as poor sleepers [1]. In addition, a similar study was conducted in twin city of Pakistan in year 2018, on factors associated with sleep deprivation and their impact on academic performance of hostelites [8].

Study was conducted on 850 students, out of which 50% were males and 50% were females. There was academic stress in 672 (79%) students, which disturbed the normal sleep cycle. Other factors affecting students sleep were; financial issues (74%), uncomfortable mattresses (79%), environmental noise (53%), poor ventilation (78%), hostel near commercial places (27%) and habit of playing games (65%).

Students living in hostels face many problems which affect their sleep quality and academic records [9]. Many hostelites face new challenges such as being solely responsible for themselves, new place with new schedules, unfamiliar environment, social obligations, bullies from among the seniors, non-cooperation from roommates, food problems, financial burden as well as academic stress. Due to these factors students are forced to change their sleeping time and alter their sleeping habits [10]. Thus, hostelites are vulnerable to sleep deprivation and have sleep-related problems. Generally, students living in hostels have a later bed-time and rise-time, longer sleep latency and shorter total sleep [11]. All these factors were assessed in the study conducted in Colombia, Bogota in 2018. The aim of this study was to assess sleep disturbances among medical students, and whether associations with academic performance, depressive symptoms or substance use were present. 544 medical students of the Pontificia University Javeriana in Bogota, Colombia were included. Results showed poor sleep quality (PSQI>5) and daytime sleepiness (ESS>10) were found in 65% of the population. A higher GPA was more frequent in students with good sleep quality.

Sleep problems among students are a primary source of many health problems in our culture.

Lack of sleep has a negative impact on a person's hormonal, metabolic, and immunological profiles and is a prominent issue in today's society [12]. It's also evident that sleep deprivation has negative consequences on the younger generation. The college years are a period of transition during which students begin to take on the responsibilities of young adults and experience a major rise in autonomy [13]. Hence, students often consider their years of college as a major stressful period in their lives due to academic curriculum and other factors associated with college life affecting the sleep [14]. However, no published literature exists to address this important problem in undergraduates in general, and medical students in particular. As a result, a cross-sectional study is being conducted to identify the prevalence of poor sleep pattern in students as well as the factors influencing regular sleep cycles. A comparison of hostelites and

day scholars was also done to determine the significance of interrupted sleep cycles among medical students and their effects on daily functioning.

Methodology

A comparative cross sectional study was conducted among medical students of Peshawar, Pakistan, from 1st -30th January 2023. The study included male and female students ranging in age from 18 to 25 years, with a mean age of 21 ±1.6 years, whereas students with any psychotic disease were excluded. A total of 284 out of 500 students from 2nd to 5th year MBBS filled the questionnaire as well as the Pittsburgh sleep quality index scale (PSQI) with a response rate of 57%. The PSQI includes 19 self-rated questions regarding sleep quality, sleep latency, sleep duration, habitual sleep efficiency, disturbances, use of sleep medication, and daytime dysfunction during the previous month. Following the PSQI protocol, respondents with a global score above 5 were labelled as poor sleepers; and those with a score of 5 or less were classified as good sleepers. The data were analyzed using SPSS. The Chi-square (χ^2) test was performed to compare the PSQI scores and to analyze the frequencies along with percentages for factors affecting sleep cycle across the study groups. Student's t-test was used to assess the mean values and statistically difference for sleep components and PSQI global scores between hostelites and day scholar. P value (0.05) was considered significant. The medical university's ethics review committee approved the study's design and ethical features. Non-probability convenience consecutive sampling technique was employed.

Results and Discussion

There were 284 responses from the total population of 500 students with a response rate of (57%). Overall, (92.2%) students had disturbed sleep including (55.6%) hostilities and (36.6%) day scholar. The PSQI scores were significantly higher among hostilities, indicating poorer sleep quality (p= 0.001) (table 1). The mean global PSQI score was 4.22±2.60 including 4.56±2.49 mean for hostelites and 3.89±2.69 for day scholar with statistically significant difference of (p=0.03). There was found no significant difference in the PSQI score between males and females students (p>0.05). As shown in table (2), a higher number of hostilities experienced sleep disruptions such as later bedtimes (12:00–3:00am), earlier wake-up times (6:00–8:00am), shorter sleep durations (45 min–1 hour and 30 minutes), and sleep latency.

The current study's findings were in line with those of Portuguese nursing students reported by Silva et al, [15] Turkish medical students [16] and Saudi medical and dental students [17-23]. A similar study by Aldhawyan et al, [24] found that PSQ was primarily associated with prolonged sleep disruption and latency, which may contribute to some dysfunction during the day. A plethora of detrimental health effects, such as obesity [22], diabetes mellitus, high blood pressure [16], anxiety [21], depression, and poor mental health [19, 20] are linked to PSQ and inadequate sleep duration. Moreover, Additionally, poor judgment [23] [25], excessive use of smartphones and a rise in teenagers' poor academic performance are all associated with disrupted sleep [18, 26] [27].

Table (3) summarizes the variables influencing the natural sleep cycle of day scholars and hostelites. 64.8 percent of students who lived in hostels reported sleeping for less than 6 to 8 hours each day, compared to (68.19%) of day scholars. Seven to eight hours of sleep were shown to be strongly associated with normal sleep, however sadly, no prior research had found any connection.

Among other factors, roommates' lack of collaboration (81.7%), use of caffeinated drinks like tea, coffee and energy drinks (25.9%), less daily exercise (23.24%), the inclination for nighttime self-study (62%) as well as academic stress (51.41%). This result is consistent with recent research where sleep disturbances in medical students were found to have an impact on academic achievement [28, 29]. Also more prone to depression (57.4 %) and tiredness (78.9 %) than day scholar. Furthermore, hostelites' usage of social media at night contributes to bad sleep patterns (78.9% reported using a cell phone in their room while sleeping). The most and least common use of smart phone was enjoyment, whereas (21.13%) of students used them for education. At bedtime, about (73.24%) hostelites utilized their smartphones for more than three hours. Excessive use of cellphones can raise the risk of poor sleep quality, depression, and anxiety, especially around bedtime and has been associated with sleep disruptions, sleep latency and daytime dysfunction [30] [31, 32].

There are certain limitations to this study that should be noted, despite the fact that it is a comparative cross-sectional study that involved undergraduate medical students from a single center. First, there is no clear causal association between poor sleep quality and its associated problems. Second, because the data were collected through self-rating, recall bias may have been introduced. Third, because this study only included medical students, the results may not

be applicable to other age groups, university students, or students studying in other academic subjects.

Table 1. Comparison of PSQI scores between hostelites and day scholars

Sleep components	Hostelites Mean ±SD (n=142)	Day Scholar Mean ±SD (n=142)	All students Mean ±SD (n=284)	Sig.
Global PSQI	4.56±2.49	3.89±2.69	4.22±2.60	0.028*
Subscale				
Later bed-time	12:00-3:00am	10.30-11: 00pm		
Rise-time	6:00-8:00am	6:00-7:00am		
Shorter sleep	45 min-1hr:30 min	1-3 hrs		
Sleep quality	1.08±0.92	0.87±0.82	0.98±0.88	0.05*
Sleep disturbances	1.16±1.17	0.87±0.96	1.01±1.08	0.02*
Sleep medication	0.33±0.74	0.29±0.70	0.31±0.72	0.681
Day time dysfunction	0.90±1.09	0.80±1.07	0.91±1.07	0.956
Sleep latency	0.85±0.80	0.81±0.81	0.840±0.80	0.89
Sleep duration	1.28±1.29	0.95±1.15	1.12±1.23	0.023*

Table 2. Sleep pattern determination among hostelites and day scholar through PSQI score

PSQI Score	Sleep pattern	Are you		χ^2 test	Sig.
		Hostelites	Day Scholar		
0-4	Good sleep	63	90	10.330	0.001*
		44.4%	63.4%		
5-21	Poor sleep	79	52		
		55.6%	36.6%		

Table 3. Factors affecting natural sleep cycle between hostelites and day scholars

Variables		Are you			
		Hostelites (n=142)	Day Scholars (n=142)	χ^2 test	Sig.
Sleep in 24 Hrs	> 6-8 hrs	50 (35.2%)	97 (68.31%)	31.151	0.000*
	< 6-8 hrs	92 (64.8%)	45 (31.69%)		
Sleep hrs at night	>4hrs	55 (38.73%)	111 (78.2%)	45.47	0.000*
	<4hrs	87 (61.27%)	31 (21.8%)		
Sleep hrs during day	>3hrs	111 (78.2%)	89 (62.67%)	8.182	0.004*
	<3hrs	31 (21.8%)	53(37.32%)		
Phone usage before bed	>3hrs	101 (71.13%)	78 (54.93%)	7.993	0.005*
	<3hrs	41 (28.87%)	64 (45.07%)		
Phone usage at bed time	>3hrs	104 (73.24%)	85 (59.86%)	5.71	0.017*
	<3hrs	38 (26.76%)	57 (40.14%)		

Purpose of the phone usage	Social media /Entertainment	112 (78.9%)	86 (60.56%)	11.28	0.001*
	Education	30 (21.13%)	56 (39.43%)		
Preference of self-study	During day	54 (38.0%)	72 (50.70%)	4.622	0.032*
	During night	88 (62.0%)	70 (49.29%)		
Use of caffeinated drinks	Yes	37 (25.9%)	35 (24.64%)	0.074	0.785
	No	105 (74.1%)	107 (75.35%)		
Negative effects on productivity level	Yes	73 (51.41%)	56 (39.43%)	4.105	0.043*
	No	69 (48.59%)	86 (60.56%)		
Daily exercise	Yes	33 (23.24%)	25 (17.6%)	1.387	0.239
	No	109 (76.8%)	117 (82.4%)		
Studies stress	Yes	88 (62.0%)	85 (59.86%)	0.133	0.715
	No	54 (38.0%)	57 (40.14%)		
Any roommates	Yes	116 (81.7%)	67 (47.18%)	36.92	0.000*
	No	26 (19.31%)	75 (52.81%)		
Depressed	Yes	82 (57.74%)	66 (46.47%)	3.612	0.050*
	No	60 (42.3%)	76 (53.52%)		
Tired	Yes	112 ((78.9%)	96 (67.60%)	4.599	0.032*
	No	30 (21.13%)	46 (32.39%)		

Conclusion

Sleep pattern was found disturbed among hostilities as compare to day scholar and are susceptible to sleep issues. Physical inactivity, increased screen time at night, a preference for daytime activities at night, lack of cooperation from roommates, and symptoms of despair and exhaustion were among the contributing variables. The findings could be useful in developing appropriate interventional techniques to improve sleep quality among dormitory medical students. Sufficient daily sleep may also have an impact on their overall physical and mental health. As a result, sleep education programs and lifestyle changes might be recommended to improve sleep quality.

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