



Prevalence Of Sleep Disorders Among Medical Students Of Lahore and Their Correlation with Obesity

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ABSTRACT

Introduction: An adequate amount of good-quality sleep is essential for optimal physical and mental health. Sleep disorders affecting sleep duration and quality result in several clinical conditions, including stress and obesity. Medical students are prone to sleep related disorders due to highly stressful academic demands and clinical practices.

Aims & Objectives: This study was carried out to investigate prevalence of sleep disorders among medical students of Lahore and their correlation with overweight and obesity.

Place and Duration of Study: The participants were medical students from Central Park Medical College and Allama Iqbal Medical College, Lahore. Duration of study was from 8th August 2022 to 24th October 2022.

Material & Methods: Data was obtained from 424 participants, by using a simple random sampling technique. A structured questionnaire was used to collect information about the symptoms of five sleep disorders as well as the participants' height and weight. For data analysis SPSS version 26 was used, a p-value of ≤ 0.05 was considered significant.

Results: This research demonstrated a noteworthy correlation between insufficient sleep and increased BMI, leading to overweight and obesity. However, sleep disorders causing reduced sleep quality did not have a significant impact on BMI.

Conclusion: According to this study, sleep disturbances are quite common among medical students of Lahore and higher BMI is associated with insomnia.

Keywords: Sleep disorders, BMI, obesity, Overweight.

INTRODUCTION

Sufficient sleep of good quality is required for the optimal functioning of the human mind and body. For adults, the American Academy of Sleep Medicine (AASM) and Sleep Research Society (SRS) currently suggest seven or more hours of sleep per night in order to maintain good health^{1,2}. Studies have shown that adequate quantity and good quality sleep are instrumental in restoring and maintaining cognitive and psychomotor performance and mental and physical health³⁻⁶. There is growing interest in studying sleep disorders because sleepiness and fatigue are epidemics leading to various health issues⁷. Insomnia is one type of sleep disorder in which individuals struggle to fall or stay asleep even when

given the chance, resulting in at least three times a week in a month of sleep deprivation. Breathing disorders such as sleep apnea, in which breathing stops several times in a state of sleep⁸⁻¹². Similarly, nightmares are usually prevalent in young children i.e. 20.6% to 26.5% and rare in adults, ranging from 1% to 4% in the general adult population^{13,14}. Narcolepsy is a type of sleep disorder in which people experience unnecessary sleepiness during daytime and a tendency to doze off during lectures, work, or drive despite feeling rested after waking up. Prevalence was found to 17.88%^{15,16}. A neurological disorder called restless legs syndrome is associated with poor quality of sleep. This neurological disorder causes unpleasant sensations in the legs and an irresistible urge to move the legs during sleep. This condition impacts sleep quantity and quality with delayed sleep onset, maintenance, insomnia, fatigue, sleepiness, reduced concentration, and depression¹⁷. Studies have shown that less than 7 hours of sleep per night results in unhealthy weight gain and obesity compared to adults who sleep 7 hours or more per night¹⁸. Sleep disorders

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negatively impact appetite and metabolic rate. By directly impacting the hypothalamus^{19,20}. It leads to increased calorie intake in waking hours, increased appetite hormone ghrelin and decreased levels of the satiety-inducing hormone leptin²¹.

Obesity is a severe health concern globally, with significant consequences on public health. The obesity pandemic coincides with the modern lifestyles, physiological and psychological stress factors that enhance cortisol production. Obesity and sleep disorders link and magnify one other in a vicious cycle created by overeating and sleep deprivation²².

Sleep disorders are quite common among the medical students due to high stress levels and poor sleep quality due to the physically, mentally, and emotionally challenging academic commitments, long study hours, frequent examinations and clinical duties and unhealthy lifestyle choices due to these commitments, such as social isolation²³. Irregular sleep patterns such as disruption, restriction, and lack of sleep due to the demanding educational responsibilities of medical studies lead to insomnia and obstructive sleep apnea syndrome (OSAS)¹.

Information about the sleep disorders and obesity among the young Pakistani population is scarce, especially concerning the emergence of symptoms in medical students. So the aim of this study is to assess prevalence of different sleep disorders among medical students of Lahore and their correlation with overweight and obesity.

MATERIAL AND METHODS

A cross sectional study was conducted to evaluate the prevalence of sleep disorders and their association with BMI among medical students of Lahore. Data was collected from two medical colleges of Lahore i.e. Central Park Medical College and Allama Iqbal Medical College. Ethical approval was taken from Institutional Review Board of Central Park Medical College, Lahore on 4th January, 2023 (IRB No: CPMC/IRB. No/1376). Data was collected from medical students aged between 21.3 ± 1.6 SD in years irrespective of their gender and their class of study. The calculated sample size was 385 keeping the confidence level at 95% and margin of error to be 5%. Structured Questionnaire focused on symptoms of five sleep disorders and the participants' height, weight and waist circumference. Five sleep disorders included Insomnia, Sleep apnea, Narcolepsy and Nightmares and Restless leg syndrome. Data was collected from 424 participants by random sampling technique. Written informed consent was taken from participants and their

identity was not revealed during or after any part of the study. Using criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV and DSM V) and the International Classification of Sleep Disorders (ICSD), participants were determined to have one of the five sleep disorders (Chung et al., 2015). For data analysis SPSS version 26 was used.

RESULTS

The data was collected from 424 participants. The study participants were young with a mean age of 21.3 ± 1.6 SD in years. About 214 (50.0%) of the participants were males and remaining 210 (49.5%) were females. Nearly 59 (13.9%) of the students were from 1st year MBBS, 89 (21.0%) were from 2nd year MBBS, 124 (29.2%) were from 3rd year MBBS, 70 (16.5%) were from 4th year MBBS and 82 (19.3%) were from final year MBBS. The prevalence of insomnia was 108 (25.5%) and sleep apnea was prevalent among 284 (67.0%). The incidence of nightmares was reported by 166 (39.2%) of the students. The prevalence of narcolepsy was 304 (71.7%) and restless leg syndrome was 279 (65.8%). The average weight of the students was 62.9 ± 13.3 (in kgs) whereas the average weight of the students before they went to medical college was 61.5 ± 13.5 (in kgs). The difference between the weights of medical students was compared by using the non-parametric Wilcoxon signed rank test. There was a statistically significant difference between average weights (p-value = 0.00). The average BMI was 22.7 ± 4.5. There exists statistically significant difference between the mean BMI of the students with and without insomnia (Table-1).

Sleep Disorder	Response	Average BMI	p-value
Insomnia	No	20.8	0.00*
	Yes	28.6	
Sleep Apnea	No	22.4	0.46
	Yes	22.9	
Nightmares	No	22.9	0.48
	Yes	22.6	
Narcolepsy	No	22.9	0.66
	Yes	22.7	
Restless leg syndrome	No	22.2	0.22
	Yes	23.0	

Table-1: Average BMI Of Medical Students With And Without Sleep Disorder (N=424)

*P-value less than or equal to 0.05 statistically significant

The difference between average BMI among medical students with and without insomnia was statistically significant, therefore the relation of

insomnia with BMI, waist circumference, age, weight before joining medical college and current weight and height was observed using binary logistic regression. The Hosmer and Lemeshow test revealed that the model accurately reflected the data. BMI was significant factor for insomnia. The odds of insomnia are 4.49 times high for increased BMI (Table-2).

Factors	B	P-value	OR	95% CI for OR	
				lower	upper
Age	-0.21	0.29	0.81	0.55	1.20
Weight (Before)	0.03	0.37	1.03	0.96	1.11
Weight (Current)	-0.03	0.55	0.97	0.87	1.08
Waist Circumference	-0.43	0.39	0.96	0.87	1.06
BMI	1.50	0.00	4.49	2.78	7.26

Table-2: Binary Logistic regression analysis of insomnia with associated factors (n=424).

DISCUSSION

Our study shows that sleep disorders are prevalent among medical students of Lahore. Sleep quantity and sleep quality are both highly affected. Narcolepsy is most prevalent, with 71.7 %, sleep apnea in 67%, and restless leg syndrome affecting 65.8% of students. Interestingly 39.2% of the students complained of nightmares; this number is alarming as recent meta-analysis's findings show that medical students frequently struggle with not getting enough sleep because they typically slept for less than the advised 6.3 hours per night. With an average PSQI score of 6.3, 55% of the students stated that they had poor sleep quality, and 31% reported having extreme fatigue during the day²⁴. Similarly, apart from excessive sleepiness during day, 165 (50.2%) of the 317 participants reported getting fewer than seven hours of sleep the previous night²⁵. Another study showed that the prevalence of daytime drowsiness was 65%. Students who had poor sleep quality were shown to be considerably more likely to experience drowsiness during the day ($p=0.0002$)²⁶. On the other hand, the study conducted by Yasin A and his Co-workers observed most prevalent sleep disorders were affective disorders (13.7%), circadian rhythm disorders (13.3%), obstructive sleep apnea (12.1%), restless legs syndrome (10.4%), narcolepsy (7.9%), nightmares (4.6%), sleepwalking (1.1%), and sleep state misperception (0.6%) were next in frequency.²⁷ Insomnia is prevalent in 25.5% of the students and have a positive correlation between Insomnia and obesity. Students who have Insomnia

were significantly overweight or obese. However, the other sleep disorders were really distributed among the students irrespective of their weight. Statistically, we found no difference in weight between the students suffering from narcolepsy, restless leg syndrome, nightmares and sleep apnea. In contrast to our findings a study done in Kuwait showed that sleep disturbance and deprivation may play indirectly roles in the emergence of metabolic disorders, such as type 2 diabetes and obesity²⁸. Independent of age and sex, we discovered a statistically significant correlation between sleep quality and obesity. Acti-graph data provided additional support for the population-wide independent relationship between sleep duration and BMI ($p < 0.001$)²⁸. In addition to this, 88 participants from King George's Medical University were chosen for the purpose of a cross-sectional investigation and found that mean sleep quality (mean PSQI SD) was low among people with grade I and II obesity. This study also showed that short sleep duration (SD (h) 6 h/day) is associated with a higher likelihood of being overweight and obese²⁹. On the other hand, a research conducted on Chinese college students found no relationship between sleeplessness and obesity³⁰.

CONCLUSION

According to this study, sleep disturbances are quite common among medical students of Lahore and higher BMI is associated with insomnia.

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