

ORIGINAL RESEARCH ARTICLE

# A Study on Insomnia among Undergraduate Medical Students

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## Abstract:

**Background:** Adequate sleep is essential for learning, physical and mental health. Medical students often have erratic sleep schedules, poor sleep hygiene and sleep quality which might affect their performance. Sleep deficiency (insomnia) accompanies certain pathological states and may require treatment.

**Objectives:** 1. To study the prevalence of insomnia among the undergraduate medical students  
2. To assess the effect of health educational intervention on their sleep habits.

**Methods:** A descriptive study was carried out from September to October, 2015 among II MBBS undergraduate medical students, Kurnool Medical College, Kurnool, Andhra Pradesh. 100 students were selected by simple random sampling. A predesigned questionnaire to assess sleeplessness and insomnia was administered as pretest, followed by a health educational intervention session. Two weeks later, post test was held, data entered in MS Excel 2007 and descriptive and inferential statistics calculated. Paired t test was applied as a test of significance; with a p value  $\leq 0.05$  was considered significant.

**Results:** Among 100 students, 48 were from 7 semester and 52 from 5 semester, with a mean age ( $\pm$ SD) in years, of  $20.2 \pm 0.58$  and  $19.71 \pm 0.61$ . There was a statistically significant increase in the perception of required hours of sleep among 5 semester students ( $p = 0.001$ ) and increase in the duration of sleep among 7 semester students in the post test ( $p = 0.05$ ). Certain sleep disorders were found among the study subjects, the most common being circadian rhythm disturbances. Primary insomnia, to a lesser extent, was found in the present study. **Conclusions:** Sleep hygiene education promotes healthy sleeping habits. While circadian sleep disturbances can be managed by behavioral therapy, primary insomnia subjects require expert medical advice.

**Keywords:** Insomnia, Medical students, Sleep hygiene.

## Introduction:

Human sleep needs can vary by age and among individuals. Sleep is considered to be adequate when there is no daytime sleepiness or dysfunction. Most sleep experts agree that the adult sleep requirement is typically between 6 and 10 hours of sleep per 24-hour period, with the majority of individuals requiring approximately 8 hours of sleep per day. The tolerated minimum sleep time is approximately 6 hours [1]. Insomnia is a common complaint in the primary care setting. Estimates of prevalence depend on the definition of insomnia used in the epidemiological research. The

most common symptoms of insomnia are difficulty initiating and maintaining sleep and waking up unrefreshed in the morning. Insomnia is defined as difficulty falling asleep, difficulty staying asleep or non-refreshing sleep in a patient who has the opportunity to acquire a normal nights' sleep of 7-8 hours.

However, insomnia is only clinically relevant if the individual presents with insomnia in combination with daytime dysfunction or distress such as fatigue, poor concentration and irritability [2].

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Sleepiness is defined as the inability or difficulty in maintaining alertness during the major wake period of the day, resulting in unintended lapses into drowsiness or sleep. Individuals may have differences in their optimal sleep requirements [3].

In adults, insomnia may be classified as acute insomnia, chronic insomnia, primary sleep disorders such as obstructive sleep apnea/sleep disordered breathing, movement disorders in sleep like restless legs syndrome, circadian rhythm sleep disorders, primary insomnia, secondary insomnia, daytime impairment. An individual who presents with insomnia, whose evaluation excludes primary sleep disorders or other causes of insomnia, is likely to suffer from primary insomnia. Primary insomnia as described above is a conditioned state of hyperarousal that inhibits the sleep process. Insomnia can be secondary to, or co-morbid with a primary sleep disorder, medical or psychiatric disease [2]. While accurate estimates of prevalence and incidence are not available due to the limitations of the current epidemiological research, population surveys and cross sectional studies consistently estimate the prevalence of insomnia to range from 6-10% worldwide [4]. Despite the prevalence of poor sleep quality and insomnia in the general population, people with sleep problems often go unnoticed in the health care system.

In healthy humans, the sleep loss hinders maintenance of their normal functions. Depressive disorders are often accompanied by difficulties in falling asleep as well as a shallow and intermittent sleep or waking up too early in the morning. Sleep deprivation appears to be increasingly prevalent, and it impairs performance across a wide range of cognitive tasks. It slows reaction time, decreases working memory capacity, interferes with normal learning and impairs executive function [5, 6, 7, 8, 9].

Empirical data from both survey and clinical outcome studies strongly suggest that, in general, physician education regarding basic sleep and circadian biology as well as the recognition, diagnosis, management, and prevention of clinical sleep disorders is inadequate. Knowledge deficits exist at the medical school level, as well as at the post-graduate training and continuing medical education levels. Achieving academic goals during their under-graduation is essential for lifelong success as a competent Indian Medical Graduate. The consequences of sleep deprivation and insomnia are especially problematic as it results in lower grade point averages, increased risk of academic failure, compromised learning, impaired mood, and increased risk of motor vehicle accidents. The presence of large gaps between scientific knowledge and clinical teaching and practice has important public health implications. It is known that physicians outside of sleep medicine significantly under-diagnose or misdiagnose sleep disorders – despite the high prevalence of these disorders –

leading to increased morbidity and decreased quality of life [10, 11].

Most programs do not recognize and address the problem of resident sleepiness. The “culture” of medicine often equates the number of hours on the job and without sleep with professionalism and dedication to patient care [12]. Research specifically on insomnia among adolescents and young adults in health care system, is relatively new and limited. This study aims to describe the prevalence of insomnia among medical students and to measure the effect of health education intervention on their sleep related issues.

#### **Materials and Methods:**

This descriptive cross-sectional study was carried out from September to October, 2015, among II MBBS students, Kurnool Medical College, Kurnool, Andhra Pradesh. Institutional ethical committee clearance was obtained. Assuming a prevalence of sleep related disorders of 50% (p), with an allowable error of 20% of p (l), and Z=1.96 (95% level of confidence), a sample size of 100 was arrived at, using the formula  $4pq/l^2$ . The class representatives were intimated beforehand about the time and place of conducting the session so that all those willing to participate could be assembled in the lecture gallery. 100 students from 5 and 7 semesters were selected by simple random sampling, using the table of random numbers. After obtaining informed consent, pre-designed questionnaire was administered as pretest.

The questions were selected from the insomnia screening questionnaire and modified according to the objectives of the present study [13]. The insomnia evaluation provides the clinician with a structured approach to the clinical evaluation of the subject's sleep. The questionnaire helps us to characterize those aspects of the subjects' sleep behavior that contribute to the insomnia by gaining information regarding the nature and severity of the problem, environment hostile to sleep, sleep routine and maladaptive behaviors that perpetuate insomnia. This was followed by a health educational intervention session lasting for one hour. A power-point presentation was used to impart knowledge on sleep hygiene. Two weeks later, a post test was held using the same questionnaire among the same study subjects. After checking for completeness of data, the responses were entered in MS Excel 2007 and subjected to descriptive and inferential statistical analysis using IBM SPSS 20. Difference in means was tested using paired t test. p value  $\leq 0.05$  was considered statistically significant.

#### **Results:**

Among 100 study subjects, there were 52 from 5 semester and 48 from 7<sup>th</sup> semester. The mean ( $\pm$ SD) age in years was  $20.2 \pm 0.58$  and  $19.71 \pm 0.61$  among 7 and 5<sup>th</sup> semester students respectively.

**Table 1: Distribution of study subjects**

Batch Gender	7 <sup>th</sup> Semester	5 <sup>th</sup> Semester	Total
Males	23(47.92%)	20(38.46%)	43(43%)
Females	25(52.08%)	32(61.54%)	57(57%)
Total(N=100)	48 (100%)	52 (100%)	100(100%)

**Table 2: Sleep Behavior among the study subjects:**

Factors	7 <sup>th</sup> semester				5 <sup>th</sup> semester			
	Pretest		Post test		Pre test		Post test	
	Yes	No	Yes	No	Yes	No	Yes	No
Trouble in getting back to sleep	14 (29.2%)	34 (70.8%)	13 (27.1%)	35 (72.9%)	7 (13.5%)	45 (86.5%)	6 (11.5%)	46 (88.5%)
Ability to function affected by lack of sleep	32 (66.7%)	16 (33.3%)	26 (54.2%)	22 (45.8%)	22 (42.3%)	30 (57.7%)	19 (36.5%)	33 (63.5%)
Safe sleep environment	42 (87.5%)	6 (12.5%)	45 (93.7%)	3 (6.3%)	52 (100%)	0	52 (100%)	0
Daytime Sleepiness	37 (77.1%)	11 (22.9%)	34 (70.8%)	14 (29.2%)	26 (50%)	26 (50%)	23 (44.2%)	29 (55.8%)

In the pretest, 88% of 7<sup>th</sup> semester students and 100% of 5<sup>th</sup> semester felt that their sleeping environment was safe. In the post test, majority reported that they had lesser trouble in getting back to sleep. The ability to function affected by lack of sleep showed a considerable change in the post test in both the semesters. The prevalence of daytime sleepiness was found to be 77.1% in the pretest among 7<sup>th</sup> semester students and 50% among 5<sup>th</sup> semester. Both batches showed a decrease in the prevalence of daytime sleepiness in the post test (70.8% and 44.2%) respectively [Table 2].

**Table 3: Perception of required number of hours of sleep**

Batch	pre-test ( Mean ± SD)	post-test (Mean ± SD)	t value	Df	p value
5 <sup>th</sup> semester	7.17±0.90	7.58±0.72	3.765	51	0.001
7 <sup>th</sup> semester	7.62±0.93	7.85±0.92	1.075	47	0.288

50% to 52% increase and 64% to 80% increase in the responses regarding the required number of hours of sleep among 5<sup>th</sup> semester students and of 7<sup>th</sup> semester students was observed. There was a statistically significant increase in the perception of required hours of sleep among 5<sup>th</sup> semester students [Table 3].

**Table 4: Duration of sleep (in hours) among study subjects:**

Batch	Pre-test ( Mean ± SD)	Post-test (Mean ± SD)	t value	df	p value
5 semester	6.88±0.85	6.96±0.86	1.428	51	0.15
7 semester	6.96±1.03	7.35±0.93	2.01	47	0.05

The observed increase in the duration of sleep (in hours) in the post test as compared to pretest was statistically significant among 7<sup>th</sup> semester students (Table 4).

**Table 5: Sleep disorders among study subjects:**

Sleep disorder	7 <sup>th</sup> semester		5 <sup>th</sup> semester	
	Pre test	Post test	Pre test	Post test
Primary sleep disorder	4 (8.33%)	2(4.17%)	6(11.55%)	3(5.76%)
Primary insomnia	2(4.17%)	2(4.17%)	5(9.61%)	5(9.61%)
Circadian rhythm disturbances	37(77.09%)	34(70.83%)	26(50%)	21(40.38%)
Normal sleep	5(10.41%)	10(20.83%)	15(28.84%)	23(44.25%)
Total	48 (100%)	48 (100%)	52 (100%)	52 (100%)

Their weekend sleep schedules were much different from their weekday schedules, with an increase of 2 hours on an average among 40% of 5<sup>th</sup> semester and 30% of 7<sup>th</sup> semester students. Majority were of the habit of watching television, handling mobile and/or computer as their pre-bedtime routine. Certain sleep disorders were found among the study subjects, the most common was circadian rhythm disturbances (Table 5).

### Discussion:

It was found that 50% of the study subjects reported normal sleeping hours in the pretest while in the post test, it increased to 63%. Most college students are sleep deprived, as 70.6% of students report obtaining less than 8 hours of sleep [14]. The ability to function affected by lack of sleep showed a considerable change in the post test, in both the semesters. One study found that 11.6% of students used alcohol as a sleep aid while in this study, no use of sleep aid was reported [15, 16].

In the present study, statistically significant increase in the perception regarding the required number of hours of sleep among 5<sup>th</sup> semester students in the post test and mean duration of sleep among 7<sup>th</sup> semester students was observed.

The strength of this study was that the sample included different semesters of medical students selected randomly in an appropriate sample size and data subjected to appropriate statistical analysis. This study had limitations such as the students' subjective account of their sleep habits.

### Conclusions:

Health education regarding sleep hygiene given to undergraduate medical students helps them to develop good sleeping habits and take care of their health. Effective management of circadian rhythm disorders is possible by health education and behavioral therapy. Primary insomnia patients should be referred to a physician for further management. Policies advocating good sleep habits to empower and educate the undergraduate medical students, are the need of the hour. Improved sleep hygiene, which is widely believed to be beneficial, has been the focus of most educational programs on sleep, although there is little published support. Future research to adequately evaluate and screen for sleep disorders and investigate effective and feasible interventions, which disseminate both sleep knowledge and encourage healthy sleep habits among medical college students in a time and cost effective manner, is a priority.

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