

# Study of Sleep Habits and Sleep Problems Among Medical Students of Pravara Institute of Medical Sciences Loni, Western Maharashtra, India

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## Abstract

**Background:** Good quality sleep and adequate amount of sleep are important in order to have better cognitive performance and avoid health problems and psychiatric disorders. **Aim:** The aim of this study was to describe sleep habits and sleep problems in a population of undergraduates, interns and postgraduate students of Pravara Institute of Medical Sciences (Deemed University), Loni, Maharashtra, India. **Subject and Methods:** Sleep habits and problems were investigated using a convenience sample of students from Pravara Institute of Medical Sciences (Deemed University), Loni, Maharashtra, India. The study was carried out during Oct. to Dec. 2011 with population consisted of total 150 medical students. A self-administered questionnaire developed based on Epworth Daytime Sleepiness Scale and Pittsburgh Sleep Quality Index was used. Data was analyzed by using Statistical Package of Social Sciences (SPSS) version 16.0. **Results:** In this study, out of 150 medical students, 26/150 (17.3%) students had abnormal levels of daytime sleepiness while 20/150 (13.3%) were border line. Sleep quality in females was better than the male. **Conclusion:** Disorders related to poor sleep qualities are significant problems among medical students in our institution. Caffeine and alcohol ingestion affected sleep and there was high level of daytime sleepiness. Sleep difficulties resulted in irritability and affected lifestyle and interpersonal relationships.

**Keywords:** Medical students, Sleep disorders, Sleep habits, Sleep quality

## Introduction

Sleep is a physiological process essential to life. Its quality is strongly related to psychological and physical health and other measures of well-being.<sup>[1]</sup> Sleep deprivation and symptoms related to sleep disorders have not only been ignored but also inadequately understood. Almost one-third of adults report difficulty in sleep.<sup>[2,3]</sup> The pattern of sleep and wakefulness in different subjects is known to vary with their age, the demands of their occupation, their physiological and psychosocial characteristics, psychiatric illness, and some types of physical

illness.<sup>[4]</sup> In the last few years, there has been a growing attention to sleep and sleeplessness-related problems. This interest is mainly due to the recognition that sleepiness and fatigue are becoming endemic in the population.<sup>[5]</sup> Sleep itself is in short supply for young physicians in their formative years because they stay up late to cram for examinations in medical college followed by prolonged stints at the hospital.<sup>[6]</sup> The escalating level of stress on students, as well as the hectic schedule of interns and residents working at the hospital is affecting their health and life style. Numerous studies conducted within the past decade have analyzed the deleterious effects of sleep deprivation on medical house staff in various medical as well as surgical specialties.<sup>[7-10]</sup> Hence, this study intends to explore the effects of sleep patterns on the three classes of medical students-undergraduate, interns as well as postgraduate of Pravara Institute of Medical Sciences (Deemed University), Loni, western Maharashtra, India.

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## Subject and Methods

This is a cross-sectional, questionnaire-based, observational study carried out during the period of October 2011 to December 2011 among undergraduate, interns and postgraduate medical students enrolled at Pravara Institute of Medical Sciences (Deemed University), Loni, Maharashtra, India. The study population consisted of total 150 medical students who included 50 undergraduates and the same number of interns and postgraduates by using a convenience sample. The questionnaire was pre-tested on subsample of 30 students and modified and necessary changes were made accordingly. The ethics committee of the institute approved the study. Confidentiality was assured to all students who volunteered and none were reimbursed. Students who were willing to participate were given a brief description about the study and its objectives. Verbal consent of each student was taken. Students who were having past history of sleep disorders and currently using sedative medications or narcotics for any acute or chronic medical condition were excluded from the study. Recruitment and collection of data continued for four weeks. The recruitment and collection process was carried out under the supervision of the authors and the help of 10 previously trained senior medical students. Information collected included information regarding age, sex, body mass index, addictions, Pittsburg quality of sleep index (PQSI) score and Epworth daytime sleepiness scale.

### Instrumental tools used in the study

Pittsburg Quality of Sleep Index (PQSI)<sup>[11]</sup>: It is a self report instrument to assess the quality of sleep. The questions are framed in a 4- point Likert type and analyze factors such as sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance and use of sleep medication.

Epworth Daytime Sleepiness Scale (EDSS)<sup>[12]</sup>: It is a scale intended to measure daytime sleepiness that is measured by use of a very short questionnaire. This can be helpful in diagnosing sleep disorders. It was introduced in 1991 by Dr. Murray Johns of Epworth Hospital in Melbourne, Australia. The questionnaire asks the subject to rate his or her probability of falling asleep on a scale of increasing probability from 0 to 3 for eight different situations. The scores for the eight questions are added together to obtain a single number. A number in the 0-9 range is considered to be normal while the numbers 10 and 11 are border line and 12-24 range indicates that expert medical advice should be sought.

All data were coded, entered, and then analyzed using the Statistical Package for Social Sciences (SPSS, Chicago, Illinois, USA), version 16.0. Descriptive results were expressed as frequency, percentage and mean (SD). Statistical significance was set at  $P \leq 0.05$ . Karl-Pearson's correlation coefficient was used to test for significant relationships between categorical variables.

## Results

It was observed from Table 1 that, mean age of the undergraduates 22.4 (0.5), interns 24.1 (1.57) and postgraduates 25.9 (1.52) year had a difference of approximately two years. There were 98/150 (65.3%) males and 52/150 (34.7%) females. The mean BMI was highest in postgraduates 23.16 (2.21) followed by interns 22.42 (2.73). Sleep duration of less than 6 hours was seen in 45/150 (30%) of postgraduates followed by 24/150 (16%) of undergraduates. The mean PQSI score was highest in postgraduates 7.80 (2.5) followed by undergraduates 5.76 (2.39). Daytime sleepiness was most commonly seen in postgraduates.

It was seen from Table 2 that, out of 150 medical students, regular coffee intake was reported by 101/150 (67.3%) students, out of which 72/101 (71.5%) were males and 29/101 (28.5%) were females. Regular alcohol intake was reported by 36/150 (24%) students, out of which 29/36 (80.6%) were males and 7/36 (19.4%) were females. Smoking was reported by 28/150 (18.7%) students, of which 22/28 (78.6%) were males and 6/28 (21.4%) were females. Regular exercise was done by 36/150 (24%) students, of which 25/36 (69.4%) were males and 11/36 (30.6%) were females. Stress was reported by 72/150 (48%) medical students, of which 52/72 (72%) were males and 20/72 (28%) were females.

**Table 1: Distribution of study population according to socio-demographic characteristics**

Socio-demographic factors	Undergraduate (n=50)	Interns (n=50)	Postgraduate (n=50)
Mean age in years (SD)	22.4 (0.5)	24.1 (1.57)	25.9 (1.52)
Sex			
Male	20	30	48
Female	30	20	02
Mean body mass index (SD)	21.02 (2.23)	22.42 (2.73)	23.18 (2.21)
Sleep duration			
>7 hrs	08	11	10
6-7 hrs	34	33	25
5-6 hrs	08	05	13
<5 hrs	00	01	02
Mean global PQSI score (SD)	5.28 (2.39)	4.76 (2.36)	7.88 (2.5)
Sleeping arrangements			
Sleep alone	20	30	27
Sharing room	30	20	23
Daytime sleepiness as per Epworth scale			
Normal	40	34	32
Borderline	02	10	06
Abnormal	08	06	12

PQSI: Pittsburg quality of sleep index

As seen from Table 3 that, there was significant positive correlation between sleep disturbances and body mass index, coffee consumption, alcohol intake, smoking, age, gender, anxiety and use of mobile/laptop. There was significant negative correlation between sleep duration and daytime sleepiness.

## Discussion

Disorders related to sleep are an issue of major concern and has long-term social and demographic consequences. In the present study, the undergraduates have to spend more time learning the theoretical aspects of medicine and they merely serve as observers of medical management of the patients at the best. The interns are in a transition phase wherein they have to prepare for post graduation and also get to play a role (albeit a

small one) in management of the patients. The postgraduates on the other hand have to juggle through responsibilities of patient care, record maintenance and studies. This is seen in the fact that Global PQSI score shows a higher disturbance of sleep in postgraduates. Other studies also corroborate this findings.<sup>[13-15]</sup>

In this study, the sleep quality in females is better than the males. Study shows that 26/150 (17.3%) students had abnormal levels of daytime sleepiness while 20/150 (13.3%) were border line. This may be related to higher prevalence of addictions in males. A study by Jean-Louis *et al.*,<sup>[16]</sup> revealed that substance abuse may increase daytime sleepiness which may result in mood disturbances.

The mean BMI was more in postgraduates and they refrained from regular exercise. BMI showed a significant correlation with global PQSI score. Hence, regular exercise and BMI play an important role in physical and mental well being of students. A study by Veldi *et al.*<sup>[17]</sup> also found that BMI was related to snoring and daytime sleepiness. The effect of life-style on sleep quality have been examined in several studies and most of them identified an association between this variable and sleep disturbances.<sup>[18]</sup>

In the present study, excessive coffee intake, alcohol abuse, smoking and use of mobile phones/laptop were the habits adversely affecting sleep in medical students. Also those who exercised regularly were less likely to develop sleep disturbances. The lesser the sleep duration greater was the daytime sleepiness. Similar findings were shown by Marzieh, *et al.*<sup>[13]</sup>

Medical students suffer high level of stress due to academic demands, particularly during examination periods. The residents are in the constant contact with patients suffering and complaining about their illness. Stress associated with insufficient sleep and excessive daytime sleepiness can lead to difficulties in interpersonal relationship, depression, anxiety, and alcohol and drug abuse.<sup>[16,19]</sup> In our study, of the 72/150 (48%) student reported being stressed, of which 33/72 (45%) were postgraduates and 24/72 (34%) undergraduates. Only 15/72 (21%) interns reported being stressed. This indicates that stress had a significance correlation with sleep disorders.

Sleep medicine is an important field in the medical study and allows medical students and professional to diagnose their own sleep disorders as well as their patients. Despite the numerous publications regarding the subject, students and professionals tend to ignore the sleep disorders and their possible consequences.<sup>[20,21]</sup> Effect of lack of sleep like memory loss, feeling depressed, feeling irritable and effects on life style were observed in our study. Good refreshing sleep is one of the constituents for general well being among students.<sup>[22]</sup>

**Table 2: Distribution of factors affecting sleep habits of study population according to sex**

Factors affecting sleep habits	Undergraduate	Interns	Postgraduate	Total
Coffee intake	(n=30)	(n=30)	(n=41)	(n=101)
Male	19	16	37	72
Female	11	14	04	29
Alcohol intake	(n=10)	(n=05)	(n=21)	(n=36)
Male	07	04	18	29
Female	03	01	03	07
Smoking	(n=07)	(n=05)	(n=16)	(n=28)
Male	05	03	14	22
Female	02	02	02	06
Regular exercise	(n=16)	(n=18)	(n=02)	(n=36)
Male	09	14	02	25
Female	07	04	00	11
Use of mobile/laptop	(n=18)	(n=30)	(n=30)	(n=78)
Male	15	22	25	62
Female	03	08	05	16
Stress	(n=24)	(n=15)	(n=33)	(n=72)
Male	16	11	25	52
Female	08	04	08	20

**Table 3: Correlation of global pittsburg quality of sleep index score with demographic profile and addiction pattern**

Particulars	Karl-Pearson's correlation coefficient	P value
Gender	0.228	P<0.001
Age	0.379	P<0.001
BMI	0.172	P=0.035
Coffee	0.248	P<0.001
Alcohol	0.371	P<0.001
Smoking	0.289	P<0.001
Stress	0.286	P<0.001
Use of mobile/laptop	0.169	P=0.038
Sleep duration	-0.339	P<0.001

## Limitations

Sleep problems may be worse than those reported in our study, as students may give socially desirable answers such as not having sleep problems. Thus, this study may be limited by underreporting. Secondly, this was a cross-sectional study based only on the previous week which might not be representative of the students' general sleep behavior. Further studies based on longer period with separate data on week days and weekends are needed. Comparison between different studies in different countries is not an easy task because there is much variability in operational definitions and different measures are used to evaluate sleep.

## Conclusion

In the present study, the sleep habits of medical students are not conducive to health. Sleep disturbances are an important issue among medical students and residents. Sleep patterns are affected by age, gender, living conditions, doing exercise and workload. Postgraduates and undergraduates showed a higher percentage of sleep disturbances as compared to interns. Despite the numerous publications regarding the subject, students and professionals tend to ignore the sleep disorders and their possible consequences. Proper counseling, better planning and support should be provided to students likely to suffer from sleep disorders. This may be related to the higher prevalence of addictions in males. Study shows that daytime sleepiness may result in mood disturbances and increased vulnerability to substance use.

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