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Original Research Article

Correlates of sleep pattern among college students in Chandigarh

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ABSTRACT

Background: Adequate sleep is an essential element for maintaining good health. Sleep disturbances in the general community particularly among university students are an essential health problem to be addressed. "Sleep disturbance" is defined by the sleep foundation as an interruption of sleep that results in arousal or awakening. The goal of this study was to ascertain the prevalence of sleep disruptions and the factors related to sleep.
Methods: This was a cross-sectional study, conducted among 256 college-going students. A self-administered questionnaire was used to collect data, which was pre-tested and pre-designed. Descriptive and analytical statistics were utilized, with analytical statistics being conducted using the Chi-square test and binomial logistic regression to find the risk factors associated with sleep disturbances.
Results: Out of 256 students, 161 (62.9%) were suffering from sleep disturbances. A majority of participants preferred to sleep after 10 pm. The mean hours of sleep received by 256 participants were 6.67 hours. A strong significant association was found between sleep disturbances and any stress in life affecting sleep, sleep quality after COVID-19, worried about test and exams, smoking, have a bed partner or roommate, Illness during past month and papers, assignments and research papers due.
Conclusions: The present study reported a high prevalence of students having sleep disturbance irrespective of their socio-demographic characteristics. Sleep disturbance was increased having to worries due to exams, any illness or having stress of any kind in their lives. The study suggests some measures should be taken to create quality sleep-friendly environment for students reducing academic stress and encouraging healthy life style.

Keywords: Sleep disturbance, College-going students, COVID-19, Pittsburg sleep quality index scale

INTRODUCTION

Sleep is a vital component of human beings for their well-being. The concept of healthy sleep is ambiguous and varied.[1] The quality of sleep matters a lot to every individual. Sleep quality does not have a commonly agreed definition; it is typically defined as a person's overall degree of contentment with the sleep experience.[2] The amount of sleep, the consistency of the sleep, and how refreshed you feel when you wake up are its primary constituents. Any interruption in sleep can have a negative impact on the wellness of an individual.

Sleep disturbances in the general community, particularly among university students, are an important health problem to address. The word "sleep disturbance" is defined by the sleep foundation as an interruption of sleep that results in arousal or awakening. This includes a variety of sleep problems including trouble falling or staying asleep, early morning awakenings, short sleep durations, and excessive daytime sleepiness.[3] Any disturbance to sleep, regardless of the cause, can have an adverse effect on the body as a whole. Disorders of excessive somnolence (DOES), disorders of the sleep-wake cycle, and dysfunctions related to sleep, sleep stages, or partial arousals are all included in the category of sleep

disturbances (parasomnias).[4] It is known that sleep disruptions are physical and psychological conditions that can have a number of negative outcomes.

Changes in sleep patterns are just one of several changes that occur throughout the student period and have an impact on various parts of young people's lives. Because of its restorative qualities, sleep is recognized to be crucial for students' general development, and getting too little sleep can have negative effects on both physical and mental health. Between the ages of 18 and 25, young adults require 7-9 hours of sleep per night. Managing severe academic and social expectations, moving away from home, adjusting to new social situations, and having unpredictable schedules are just a few of the challenges that university students must endure.[3] Significant independences, little supervision, harmful routines like drinking and smoking, and easily accessible leisure activities are characteristics of university life (e.g., student clubs, concerts, and nightclubs). Students are much more susceptible to sleep disorders and deprivation owing to higher academic and social demands, irregular schedules, and other variables.

College students who experience rapid lifestyle and behavioural changes may have irregular sleep patterns. Energy drinks and heavier drinking habits foster less restful sleep. Consuming caffeine is attributed to common signs of poor sleep, such as insomnia and sleep disturbances. Young people also routinely use screen-based technology, and poor sleep quality is considerably positively connected with both low physical activity and excessive screen time. Even among young adults and college students, sleep disruptions are prevalent and are linked to worse mental health. These factors may raise the risk of sleep disturbances. Poor academic performance may also increase stress, which has a negative impact on mental health and lowers the quality of sleep. Addiction to food does not promote restful sleep. Elevated emotional eating is related to restless sleep.[2]

Additionally, the recent COVID-19 pandemic outbreak has negatively affected the health-related quality of life and sleep quality of university students.[5] There were more sleep problems during the lockdown period in 2020 which were linked to high levels of stress, anxiety, and depression. The COVID-19 pandemic has caused university students to modify their daily schedules. Since students were no longer required to attend their traditional morning sessions, the lockdown forced educational systems to adjust, allowing students to change their study schedules. Sleep issues are worsened by all of these scheduling and teaching disruptions.[6]

Studies on sleep disturbance are primarily found in western nations, and there is a dearth of literature on the subject in India, in spite of the fact that sleep disturbances have devasting effects on well-being and satisfaction related to health and overall quality of life particularly for students.[7] The objective of the study was to investigate the sleeping patterns of college students and to identify the contributing factors affecting sleep. The present study may be useful for designing public health interventions and developing educational programs for young individuals to promote quality sleep.

METHODS

Study type

The study was conducted using a cross-sectional study design.

Study population

All undergraduate and postgraduate students who studied in different colleges located in Chandigarh during the study period of February 2023 to June 2023. The study did not include off-campus students who were engaged in internships or pursuing medicine in hospitals.

Sample size and sampling technique

The sample size was calculated by using the following formula with an approximation for a large population.

$$n = Z\alpha^2 \times (1-p)/d^2$$

Where p=prevalence, d=absolute precision, and Z is the value of standard normal variate. On the basis of 55.8% of students having sleep disturbance as the most important outcome parameter reported in the existing literature and assuming a 90% confidence coefficient and 5% absolute precision, the sample size comes out to be 256 youths aged 15-24 years.[3] Stratified random sampling was adopted. Different disciplines were used for stratification purposes.

Study area and period

This was a cross-sectional study conducted among the students of different colleges located in Chandigarh (Panjab University Campus, GMCH Sec-32, PGGC Sec-11 and DAV-Sec-10) for a period of 5 months from February 2023 to June 2023.

Study tool and procedure

A total of 256 students participated in the study from different study backgrounds. Both graduate and undergraduate students in the age group of 15-24 years and were studying in the colleges located in Chandigarh were included in the study. a self-administered questionnaire, which comprised self-structured questions, the Pittsburgh sleep quality index (PSQI) scale and socio-demographic pro forma, was used to gather the data after obtaining permission from the college administration. A score above 5 on the PSQI scale was considered as sleep disturbed while a score below 5 was considered as undisturbed sleep as suggested by the authors.

Inclusion criterion

In this study, only those students were included who were in the age group of 15-24 years and were going to college.

Exclusion criterion

Off-campus students engaged in internships at organizations or practising medicine in hospitals or those above 24 years of age were not included.

Ethical approval

ICMR 1997 ethical guidelines were strictly followed. Informed consent was taken from the participants.

Statistical analysis

Descriptive and analytical statistics were applied. Categorical variables were expressed as proportion and percentage. The Chi-square test was used to find an association between sleep disturbance and various factors. Odds ratios along with their respective 95% confidence intervals and binomial logistic regression were used for risk analysis to find risk factors of sleep disturbance. Data analysis was carried out by using statistical package for the social sciences (SPSS) version 27.0.

RESULTS

A total of 256 students from different colleges participated in the study. According to the age distribution, the majority (62.5% of the population) was between the ages of 22 and 24. Regarding the educational programme, the majority were graduate students (67.2%), with undergraduate students (32.8%) making up the remainder. The largest study group (37.1%) was from the medical field, followed by the arts (24.2%). The majority of participants (50.8%) lived in hostels, followed by 35.9% who lived at home. According to the distribution of total monthly household income, the majority (57.1%) of the individuals had income above Rs. 60,000.

The majority of people (85.9%) preferred to head for bed after 10 p.m., with 49.6% sleeping between 10 p.m. to 12 a.m. A sizable portion of participants (43.8%) needed no more than 15 minutes to fall asleep, while 21.5% needed more than 30 minutes. Nearly 56.3% of the participants said they preferred to awaken between 6:01 and 8 in the morning. Only a tiny percentage of people (4.3%) got up after 10 am. The mean hours of sleep received by 256 participants were 6.67 hours.

About 161 (62.9%) participants experienced sleep disturbances, while approximately 37% slept undisturbed.

The age groups of 19 to 21 and 22 to 24 reported the highest percentages of sleep disturbances. With respect to educational programmes, undergraduates experienced a higher rate of disturbed sleep than graduates did. Students from the medical field reportedly had higher percentages of sleep disturbance. No significant association can be observed between socio-demographic characteristics and sleep disturbances ($p>0.05$) (Table 1).

After COVID-19, a sizable percentage of people reported alterations in their sleep patterns, with 68.9% reporting sleep disruptions and 31.1% reporting no change. Additionally, there was a difference in sleep quality, with 46.0% of respondents reporting poorer sleep compared to 23.0% who reported better sleep. Furthermore, a sizable percentage of participants (47.8%) reported higher levels of stress and anxiety, compared to 52.2% who reported lower levels. The statistical significance of these differences ($p<0.05$) indicates that the pandemic had a significant effect on sleep (Table 2).

There was a significant association found between any stress in life affecting sleep, consuming any kind of caffeine such as tea or coffee at night and smoking with sleep disturbance ($p<0.05$). Unexpectedly no association was found between sleep disturbance and nap during daytime, use any kind of electronic device such as mobile phone, laptop or TV before sleeping and physical exercise ($p>0.05$) (Table 3).

A significant association has been observed between sleep disturbances and have a bed partner or roommate, illness during past month, papers, assignments and research papers due, worried about tests and exams and felt isolated ($p<0.05$). The sleep environment being calm and quiet didn't seem to affect sleep ($p>0.05$) (Table 4).

Based on the logistic regression analysis, none of the socio-demographics included in the model was found to be a significant risk factor for sleep disturbance. It clearly indicated that socio-demographic factors didn't influence the risk or probability of sleep disturbance in the studied population of college-going students (Table 5).

Table 1: Association of socio-demographic characteristics with sleep disturbances.

Background characteristics	Sleep disturbed (%)	Sleep not disturbed (%)	Chi square	P value
Age (years)				
Less than or equals to 18	10	7	1.36	0.504
19 to 21	46	33		
22-24	105	55		
Gender				
Male	78	50	0.41	0.51

Continued.

Background characteristics	Sleep disturbed (%)	Sleep not disturbed (%)	Chi square	P value
Female	83	45		
Education program				
Undergraduate	46	38	3.54	0.06
Graduate	115	57		
Study background				
Medical	61	34	1.38	0.7
Non-medical	43	28		
Commerce	20	8		
Arts	37	25		
Living place				
Home	56	36	2.22	0.52
Hostel	80	50		
Flat/PG	24	9		
Other	1	0		
Total monthly income of the family				
Rs. 30,000 or below	25	10	2.66	0.44
Rs. 30,001 to 60,000	45	30		
Rs. 60,001 to 90,000	25	20		
Above Rs. 90,000	66	35		

Table 2: Association of sleep disturbances with COVID-19.

Sleep pattern after COVID-19	Sleep disturbed, N (%)	Sleep not disturbed, N (%)	χ^2	P value
After COVID-19, sleep pattern changed				
Yes	111 (68.9)	53 (55.8)	4.491	0.03
No	50 (31.1)	42 (44.2)		
Quality of sleep after COVID-19				
Better	37 (23.0)	25 (26.3)	7.228	0.02
Worse	74 (46.0)	28 (29.5)		
Stress, anxiety increase after COVID-19				
Yes	77 (47.8)	33 (34.7)	4.177	0.04
No	84 (52.2)	62 (65.3)		

Table 3: Association between lifestyle factors and sleep.

Lifestyle factors that can affect sleep	Sleep disturbed N (%)	Sleep not disturbed N (%)	Total N (%)	χ^2	P value
Nap during daytime					
Yes	86 (53.4)	45 (47.4)	131 (51.2)	0.875	0.35
No	75 (46.6)	50 (52.6)	125 (48.8)		
Use any kind of electronic device such as mobile phone, laptop or TV before sleeping					
Never	8 (5)	12 (12.6)	20 (7.8)		
Almost never	11 (6.8)	4 (4.2)	15 (5.9)		
Sometimes	28 (17.4)	19 (20.0)	47 (18.4)	6.233	0.18
Fairly often	39 (24.2)	18 (18.9)	57 (22.3)		
Very often	75 (46.6)	42 (44.2)	117 (45.7)		
Any stress in life affecting sleep					
Never	15 (9.3)	26 (27.4)	41 (16.0)		
Almost never	24 (14.9)	15 (15.8)	39 (15.2)		
Sometimes	55 (34.2)	31 (32.6)	86 (33.6)	23.813	0.00
Fairly often	24 (14.9)	16 (16.8)	40 (15.6)		
Very often	43 (26.7)	7 (7.4)	50 (19.5)		
Consume any kind of caffeine such as tea or coffee at night					
Never	58 (36.0)	51 (53.7)	109 (42.6)	40.105	0.03
Almost never	27 (16.8)	14 (14.7)	41 (16.0)		

Continued.

Lifestyle factors that can affect sleep	Sleep disturbed N (%)	Sleep not disturbed N (%)	Total N (%)	χ^2	P value
Sometimes	45 (28.0)	13 (13.7)	58 (22.7)		
Fairly often	20 (12.4)	10 (10.5)	30 (11.7)		
Very often	11 (6.8)	7 (7.4)	18 (7.0)		
Restless sleep after elevated eating (eating more than usual or consuming junk food or high sugar or salt content food)					
Never	45 (28.0)	40 (42.1)	85 (33.2)		
Almost never	37 (23.0)	14 (14.7)	51 (19.9)		
Sometimes	52 (32.3)	29 (30.5)	81 (31.6)	7.191	0.12
Fairly often	16 (9.9)	9 (9.5)	25 (9.8)		
Very often	11 (6.8)	3 (3.2)	15 (5.5)		
Physical exercise					
No or little exercise	57 (35.4)	39 (41.1)	96 (37.5)		
Once or twice a week	43 (26.7)	23 (24.2)	66 (25.8)	2.521	0.47
More than twice a week	27 (16.8)	10 (10.5)	37 (14.5)		
Daily	34 (21.1)	23 (24.2)	57 (22.3)		
Smoking					
Yes	17 (10.6)	2 (2.1)	19 (7.4)	8.1	0.004
No	144 (89.4)	93 (97.9)	237 (92.6)		
Smokeless tobacco					
Yes	2 (1.2)	1 (1.1)	3 (1.2)	0.019	0.89
No	159 (98.8)	94 (98.9)	253 (98.8)		
Alcohol					
Yes	22 (13.7)	10 (10.5)	32 (12.5)	0.538	0.46
No	139 (86.3)	85 (89.5)	224 (87.5)		
Substance abuse					
Yes	7 (4.3)	1 (1.1)	8 (3.1)	2.143	0.14
No	154 (95.7)	94 (98.9)	248 (96.9)		

Table 4: Association between sleep disturbances and other variables.

Other factors that can affect sleep	Sleep disturbed, N (%)	Sleep undisturbed, N (%)	Total, N (%)	χ^2	P value
Sleep environment is calm and quiet					
Always	63 (39.1)	48 (50.5)	111 (43.4)		
Never	7 (4.3)	3 (3.2)	10 (3.9)	3.186	0.20
Often	91 (56.5)	44 (46.3)	135 (52.7)		
Have a bed partner or roommate					
No bed partner or roommate	53 (32.9)	48 (50.5)	101 (39.5)		
Partner/roommate in other room	8 (5.0)	1 (1.1)	9 (3.5)	9.746	0.02
Partner in same room, but not same bed	75 (46.6)	37 (38.9)	112 (43.8)		
Partner in same bed	25 (15.5)	9 (9.5)	34 (13.3)		
Illness during past month					
Yes	45 (28.0)	12 (12.6)	57 (22.3)	8.1	0.004
No	116 (72.0)	83 (87.4)	199 (77.7)		
Papers, assignments and research papers due					
Never	32 (19.9)	35 (36.8)	67 (26.2)		
Almost never	25 (15.5)	7 (7.4)	32 (12.5)		
Sometimes	62 (38.5)	38 (40.0)	100 (39.1)	12.713	0.013
Fairly often	29 (18.0)	11 (11.6)	40 (15.6)		
Very often	13 (8.1)	4 (4.2)	17 (6.6)		
Worried about tests and exams					
Never	23 (14.3)	21 (22.1)	44 (17.2)		
Almost never	17 (10.6)	5 (5.3)	22 (8.6)	14.662	0.005
Sometimes	51 (31.7	41 (43.2)	92 (35.9)		

Continued.

Other factors that can affect sleep	Sleep disturbed, N (%)	Sleep undisturbed, N (%)	Total, N (%)	χ^2	P value
Fairly often	36 (22.4)	22 (23.2)	58 (22.7)		
Very often	34 (21.1)	6 (6.3)	40 (15.6)		
Felt isolated					
Never	16 (9.9)	29 (30.5)	45 (17.6)		
Almost never	26 (16.1)	17 (17.9)	43 (16.8)		
Sometimes	69 (42.9)	28 (29.5)	97 (37.9)	22.263	0.00
Fairly often	26 (16.1)	16 (16.8)	42 (16.4)		
Very often	24 (14.9)	5 (5.3)	29 (11.3)		

Table 5: Binomial logistic analysis of risk factors of sleep disturbance.

Risk category	Number	Percentage	Regression coefficient	Odds ratio	95% C.I. for EXP (B)		P value
					Upper limit	Lower limit	
Age (years)							
Up to 21*	96	37.5		1.00			
22-24	160	62.5	0.086	1.089	0.567	2.095	0.797
Educational status							
UG*	84	32.8		1.00			
PG	172	67.2	0.46	1.584	0.823	3.046	0.169
Study discipline							
Science streams*	166	64.8		1.00			
Others	90	35.2	0.002	1.002	0.565	1.778	0.994
Living place							
Home/hostel*	222	86.7		1.00			
Others	34	13.3	0.365	1.441	0.614	3.384	0.401
Social relationship							
Good/very good*	135	52.7		1.00			
Others	121	47.3	0.183	1.201	0.654	2.206	0.555
Family relationship							
Good/very good*	179	69.9		1.00			
Others	77	30.1	0.536	1.71	0.813	3.596	0.157
Economic condition							
Good/very good*	116	45.3		1.00			
Others	140	54.7	0.581	1.788	0.932	3.432	0.08
Living arrangement							
Good/very good*	144	56.3		1.00			
Others	112	43.8	0.025	1.025	0.513	2.048	0.944
Gender							
Female*	128	50		1.00			
Male	128	50	-0.225	0.799	0.461	1.382	0.369

*Reference category.

DISCUSSION

With the aim of determining Chandigarh college students' sleep patterns and the factors affecting their sleep, a cross-sectional study was conducted. The sample had a total of 256 students from different colleges in Chandigarh. The study population's prevalence of sleep disruption was determined to be 62.9%. The students received an average of 6.67 hours of sleep, which falls below the recommended hours by the National Sleep Foundation.

According to a study conducted among 536 students attending college at Annamalai University in Tamil Nadu, 55.7% of students experienced sleep problems. Regular exercise has been linked to better sleep quality. The age ranges of 18–20 and 21–25 years showed a significant correlation ($p<0.05$). The quality of sleep was not shown to be significantly impacted by having any tasks or research papers due.[3]

In contrast, the present study revealed that 62.9% of people reported sleep problems. Exercise had no impact on sleep, and the quality of any upcoming projects, papers, or assignments was related to sleep. No correlation was discovered between age groups and sleep disturbances.

At Sapienza University in Rome, 1279 students participated in a study, and 65% of them reported having poor sleep quality. The average amount of time spent sleeping was 7 hours. 32.6% of students claimed to have slept for fewer than 7 hours.[5] In the current study, the majority of individuals (76.2%) reported sleeping fewer than 7 hours per night.

A study with 1,215 participants was carried out among Chandigarh college students, in which 33.7% of students reported having poor-quality sleep, whereas 62.9% of students in the current study reported having interrupted sleep.[8]

A survey of 203 medical students at the Dr. B.R.AM Teaching Hospital and Tripura Medical College was conducted. 57% of students reported having sleep problems. 70.9 percent of students slept for only four to six hours every night.[9] While in the current study, 62.9% of students reported having sleep disturbances and 43.8% of students slept for less than six hours per night. When compared to global data, a German university indicated that 60% of students had poor sleep quality.[10]

122 students took part in a study conducted at a Christian college in the US.[11] 7 hours or more of sleep per night was received by 66% of the individuals. In comparison, only 23.80% of participants in the current study reported sleeping for more than 7 hours. No correlation was discovered between restless sleep following the consumption of elevated amounts of food (whether it be junk food or food high in salt or sugar content) and sleep disturbances. However, a study has revealed that eating habits were significantly linked to sleep patterns.[12]

No effect of using any kind of electronic device such as a mobile phone, laptop or TV before sleeping was seen on sleep disturbances. However, according to a study on the effect of media on sleep among Belgian adolescents, television, computers, and the internet, all have a negative impact on sleep quality.[13] In a study of school-aged children and adolescents, researchers found a correlation between delayed bedtime, short sleep duration, and media use. They postulated that media use could disrupt sleep, raise mental, emotional, or physiological arousal, or that exposure to intense light from a computer, television, or other source could delay the circadian rhythm.[14]

The study has some limitations as well. Due to time constraints, the study could not cover a large sample of college-going students. Thus, capped to only 256 sample size. Many participants were reluctant to disclose their total family monthly income. Since exams were coming up and many students were preoccupied with studying, several of them declined to answer the questionnaire.

CONCLUSION

This study showed that the majority of participants preferred to sleep after 10 p.m. The mean hours of sleep received by 256 participants were 6.67 hours. Sleep disturbances among students' increase when they have stress of any kind in their lives, and are worried about tests or exams and after any illness. Thus, it is crucial to address these issues if we want students' sleep habits to improve. Essential tactics include establishing a regular sleep schedule, creating a sleep-friendly atmosphere, controlling academic stress and encouraging good technology use habits.

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