

**DIFFERENTIALS IN LIFESTYLE-RELATED FACTORS INFLUENCING PATTERN
AND QUALITY OF SLEEP OF COLLEGE-GOING MALE AND FEMALE STUDENTS IN
CHANDIGARH, INDIA**Manjot Kaur¹, Dr. Dinesh Kumar*¹ and Dr. Manoj Kumar²¹Centre for Public Health, Panjab University, Chandigarh-160014.²Professor, Department of Community Medicine, Government Medical College and Hospital, Chandigarh, India.³Assistant Professor, Centre for Public Health, Panjab University, Chandigarh-160014.

*Corresponding Author: Dr. Dinesh Kumar

Centre for Public Health, Panjab University, Chandigarh-160014.

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ABSTRACT

Background: Sleep disorders in the general community particularly among youths are a matter of serious public health concern. There is little research on how college students' health and well-being are affected by their sleep quality. The purpose of the study is to investigate the pattern and quality of sleep among youth students and to identify life style related contributing factors with their gender differentials. **Methodology:** Present cross sectional study was conducted during February 2023 to June 2023 among 256 students aged 15-24 years studying at undergraduate and postgraduate levels in Panjab University, Chandigarh, India. A self-administered questionnaire was used for collecting socio-demographic characteristic and sleep pattern and sleep quality related information. Pittsburgh sleep quality index (PSQI) scale was used to decide quality of sleep. **Results:** There were 51.2% respondents including 42.2% of men and 60.2% of women who admitted to napping throughout the day. On the other hand, 39.8% of women and 57.8% of men said they never napped during the day. The average duration of sleep was 6.67 hours and 76.2% of the individuals slept for less than 7 hours of sleep during 24 hours. Late night sleep was a common feature among both males and females. Naps during day times were reported by 51.2% of the total participants. Sleep efficiency scores above 85% were achieved by the majority of subjects (70.3%). A total of 64.1% of the respondents reported a change in their sleep pattern after COVID-19, with 60.2% of males and 68.0% of females reporting a change. Among all respondents, 42.2% of men and 43.8% of women reported that following COVID-19, their levels of tension and anxiety had increased. Among all, 86.4% respondents reported use of gazettes before sleeping and 75.8% reportedly felt irritated after a poor sleep, with more prevalence among women (83.6%) than that in men (67.9%). More male subjects were found engaged in physical exercise than female counterparts. About 74 % individuals reported to be worried about tests or exams, with more prevalence in females (86.7%) than male (61.7%). No significant variability was found in the sleep patterns of male and female participants. **Conclusions and Suggestions:** Findings of our study indicated that sleep quality of male and female youths do not differ significantly but sleep patterns among male and female students differ significantly in terms of some selected outcomes. However, there was significant association between substance abuse and gender and also with physical exercise and modifying other lifestyle factors which can affect sleep. Community-based health education programmes should be organized for promoting sleep hygiene practices and quality sleep habits.

KEYWORDS: Lifestyle factors; Pittsburgh sleep quality index (PSQI); Sleep quality; sleep pattern.**INTRODUCTION**

Sleep disorders in the general community particularly among youths is a matter of serious public health concern. There is little research on how college students' health and well-being are affected by their sleep quality. Quality sleep is essential for healthy lifestyle. The general definition of sleep quality is an individual's level of overall satisfaction with their sleep experience, although there is no universally accepted definition for this concept. The amount and type of sleep that

respondents get affects their overall quality of life and varies depending on the environment and demographic.

Sleep hygiene is a vague and multifaceted notion.^[1] Sleep patterns may be disturbed in college students who undergo quick changes in their lifestyle and behaviour. Due to a variety of factors, including erratic schedules, increased academic and social expectations, and other variables, students are far more vulnerable to sleep disorders and deprivation. Throughout the school year, a number of changes take place that affect several aspects

of young respondents' lives, including sleep patterns. Sleep habits may be disturbed in college students who undergo quick changes in their lifestyle and activity. Young adults need seven to nine hours of sleep every night between the ages of 18 and 25. University life involves a great deal of independence, minimal supervision, risky behaviours like drinking and smoking, and readily available recreational opportunities.^[2] College students' academic performance, intelligence, emotional quotient, and physical and mental health are all strongly correlated with their sleep patterns.^[3] Many physical issues, such as cardiovascular and metabolic disorders, have been related to inadequate sleep quality, short sleep duration, and sleep disorders like insomnia and obstructive sleep apnea. Students' health-related quality of life and sleep quality have also 2020 lockdown, there were more sleep issues, which were associated with elevated levels of stress, anxiety, and depression. Students at universities have had to adjust their daily schedules due to the COVID-19 pandemic. Because of all of these scheduling and teaching conflicts, sleep problems get worse.^[5] According to a study done at the University of Tamil Nadu in India, 55.8% of college students reported having sleep disturbances. Sleep issues affected 299 out of the 536 students (55.78%); of these, 83% had less than an hour between their regular sleep and screen time, and 70.9% of the students were female. Frequent test anxiety, a sense of being left behind, dread of pandemics and online learning, loneliness, and stealing food from the home or hostel were all strongly correlated with sleep problems.^[6] According to a research done in Tripura, 57% of students complained of having trouble sleeping, with men experiencing this issue more frequently than women, which had an impact on their academic performance.^[7] Majority of studies on sleep disturbance are conducted in western countries, and India has a dearth of relevant literature.^[8] There were differences in students' perceptions of how sleep affects their daily routine and way of life as well as in how well they understand the effects of sleep.^[9] Students who frequently took longer naps and periods of disturbed or insufficient sleep showed less motivation and negative attitudes.^[10] A quick nap had been reported to improve concentration and output. Students' levels of fatigue can be decreased by education that includes good sleep hygiene and sleep awareness.^[11] A recent study carried out in the northern region examined the factors linked to insomnia.^[12] There is relatively little literature on the topic in India particularly in this part of the country. Moreover, studies on prevalence and patterns of sleep quality are majorly confined to the geriatric respondents and mainly in clinical settings.

There is a lack of literature among youths in spite of the fact that sleep disturbances have devastating effects on well-being and satisfaction related to health and overall quality of life particularly for youths. The purpose of the study is to investigate the pattern and quality of sleep among youth students and to identify life style related contributing factors with their gender differentials.

MATERIALS AND METHODS

Study Design, Area and Period: The present cross-sectional study was conducted from February 2023 to June 2023 among youths studying at undergraduate and postgraduate levels in Panjab University, Chandigarh, India. A total of 256 students aged 15-24 years studying in the colleges of Panjab University Chandigarh were included in the study.

Sampling Size and Technique: The sample size was calculated on the basis of a 55.8% prevalence of sleep disturbance among students reported in the existing literature, assuming a 90% confidence coefficient and 5% absolute precision. Stratified random sampling was adopted. Stratification was done based on different disciplines.

Study Tool and Procedure: Students from different study backgrounds, both graduate and undergraduate students were represented in the study. A self-administered questionnaire was used for collecting socio-demographic characteristics sleep patterns and sleep quality-related information. Pittsburgh Sleep Quality Index (PSQI) scale was used to decide the quality of sleep. 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.

Ethical Approval: Ethical guidelines issued by the Indian Council of Medical Research (ICMR) were followed. The survey was conducted with prior permission from the college administration. Informed consent was taken from the participants.

STATISTICAL METHODS

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. Data analysis was carried out by using statistical package for the social sciences (SPSS) version 27.0.

RESULTS

Respondents represented varied socio-demographic characteristics. The male respondents represented 24.2% of those aged 19 to 21 as compared 37.5% of the female respondents in that age group. Age group 22 to 24 years included 62.5% males and 56.3% females. Undergraduates made up 32.8% of the respondents, with 31.3% men and 34.4% women enrolled in educational programs. Regarding the place of residence, the majority of males (42.2%) and females (29.7%) resided at their homes with parents and 50.8% respondents including 46.1% men and 55.5% women were staying in hostels. There were 16.4% men and 10.9% women belonging to low SES.

Table 1: Sleep pattern of respondents in association with gender.

Sleep pattern		Gender		Total n (%)	χ^2	P- value
		Male n (%)	Female n (%)			
Nap during daytime	Yes	54 (42.2)	77 (60.2)	131 (51.2)	8.27	0.004
	No	74 (57.8)	51 (39.8)	125 (48.8)		
Duration of nap	Less than or equal to 20 minutes	9 (7.0)	5 (3.9)	14 (5.5)	13.529	0.009
	21 to 40 minutes	11 (8.6)	11 (8.6)	22 (8.6)		
	41 to 60 minutes	21 (16.4)	33 (25.8)	54 (21.1)		
	More than 60 minutes	13 (10.2)	28 (21.9)	41 (16)		
	Almost never	18 (14.1)	23 (18.0)	41 (16.0)		
	Sometimes	30 (23.4)	28 (21.4)	58 (22.7)		
	Fairly often	17 (13.3)	13 (10.2)	30 (11.7)		
Very often	7 (5.5)	11 (8.6)	18 (7.0)			
After COVID-19, Sleep patterns changed	Yes	77(60.2)	87 (68.0)	164 (64.1)	1.697	0.19
	No	51(39.8)	41 (32.0)	92 (35.9)		
Quality of sleep after COVID-19	Better	33(25.8)	29 (22.7)	62 (24.2)	3.267	0.19
	Worse	44(34.4)	58 (45.3)	102 (39.8)		
Stress, anxiety increase after COVID-19	Yes	54(42.2)	56 (43.8)	110 (43.0)	0.064	0.80
Sleep becomes restless after overeating	Never	49 (38.3)	36 (28.1)	85 (33.2)	3.258	0.516
	Almost never	25 (19.5)	26 (20.3)	51 (19.9)		
	Sometimes	37 (28.9)	44 (34.4)	81 (31.6)		
	Fairly often	11 (8.6)	14 (10.9)	25 (9.8)		
	Very often	6 (4.7)	8 (6.3)	14 (5.5)		
	Never	49 (38.3)	36 (28.1)	85 (33.2)		
	No	74(57.8)	72 (56.5)	146 (57.0)		

Sleep pattern of respondents in association with gender is represented in Table-1. There were 51.2% respondents including 42.2% of men and 60.2% of women who admitted to napping throughout the day. On the other hand, 39.8% of women and 57.8% of men said they never napped during the day. The association was seen between nap during the day time and gender was statistically significant ($P=0.004$). Regarding nap duration, 7.0% of men and 3.9% of women said they slept for less than or equal to 20 minutes. 8.6% of both men and women reported taking naps between 21 and 40 minutes, while 16.4% of men and 25.8% of women claimed to have slept for between 41 and 60 minutes. 10.2% of men and 21.9% of women reported taking naps longer than 60 minutes. A strong association was found between duration of nap and gender ($P=0.009$). A total of 64.1% of the respondents reported a change in their sleep pattern after COVID-19, with 60.2% of males and 68.0% of females reporting a change. In contrast, 32.0% of women and 39.8% of men said their sleep patterns had not changed. No significant association was observed between change in sleep pattern after COVID-19 and gender ($P=0.19$). After COVID-19, 25.8% of men and 22.7% of women said their sleep quality had improved. Overall, 24.2% of respondents reported having better sleep. On the other hand, 39.8%, or 34.4% of men and 45.3% of women, experienced poorer sleep quality. No significant association was observed between quality of sleep after COVID-19 and gender ($P=0.19$). Among all

respondents, 42.2% of men and 43.8% of women reported that following COVID-19, their levels of tension and anxiety had increased. 43.0% of respondents reported feeling more stressed or anxious. In contrast, 57.8% of men and 56.5% of women who made up the entire respondents reported no increase. There was no significant association between gender and the rise in stress and anxiety and sleep following COVID-19 ($P=0.064$). Among 38.3% of men and 28.1% of women sleep restlessness was never felt after overeating and almost never in 19.5% of men and 20.3% of women reported this. No significant association ($P=0.516$) was observed between restless sleep after overeating and gender. (**Table 1**)

Table 2: Association between components of Pittsburgh Sleep Quality Index (PSQI) and Gender.

PSQI Components		Gender		Total N (%)	Chi-square	p-value
		Male n (%)	Female n (%)			
Sleep duration	> 7 hours	35 (27.3)	26 (20.3)	61 (23.8)	2.997	0.39
	6-7 hours	37 (28.9)	46 (35.9)	83 (32.4)		
	5-6 hours	47 (36.7)	50 (39.1)	97 (37.9)		
	<5 hours	9 (7.0)	6 (4.7)	15 (5.9)		
Sleep Efficiency	>85%	93 (72.7)	87 (68)	180 (70.3)	1.944	0.58
	75-84%	24 (18.8)	24 (18.8)	48 (18.8)		
	65-74%	5 (3.9)	10 (7.8)	15 (5.9)		
	<65%	6 (4.7)	7 (5.5)	13 (5.1)		
Daytime dysfunction	0	16 (12.5)	7 (5.5)	23 (9.0)	4.404	0.22
	1	68 (53.1)	79 (61.5)	147 (57.4)		
	2	35 (27.3)	33 (25.8)	68 (26.6)		
	3	9 (7.0)	9 (7.0)	18 (7.0)		
Subjective sleep quality	Very Good	25 (19.5)	27 (21.1)	52 (20.3)	0.326	0.95
	Fairly Good	79 (61.7)	77 (60.2)	156 (60.9)		
	Fairly Bad	21 (16.4)	22 (17.2)	43 (16.8)		
	Very Bad	3 (2.3)	2 (1.6)	5 (2.0)		
Sleep latency	0	29 (22.7)	31 (24.2)	60 (23.4)	3.188	0.36
	1	58 (45.3)	48 (37.5)	106 (41.1)		
	2	30 (23.4)	41 (32.0)	71 (27.7)		
	3	11 (8.6)	8 (6.3)	19 (7.4)		
Use of sleep medication	Not during the past month	106 (82.8)	109 (85.2)	215 (84.0)	5.325	0.15
	Less than once a week	9 (7.0)	13 (10.2)	22 (8.6)		
	Once or twice a week	13 (10.2)	5 (3.9)	18 (7.0)		
	Three or more times a week	0 (0.0)	1 (0.8)	1 (0.4)		
Sleep disturbance	0	7 (5.5)	4 (3.1)	11 (4.3)	4.892	0.18
	1-9 (1)	94 (73.4)	87 (68)	181 (70.7)		
	10-18 (2)	27 (21.1)	34 (26.6)	61 (23.8)		
	19-27 (3)	0 (0.0)	3 (2.3)	3 (1.2)		

Table -2 presents Pittsburgh Sleep Quality Index (PSQI) of respondents with Gender. In terms of sleep duration, 23.8% of all respondents including 20.3% of women and 27.3% of men slept for more than 7 hours each day and 5.9% of them including 4.9% women and 7.0% of men reported even sleeping for less than 5 hours. There was no significant association ($P=0.39$) between sleep duration and gender. Majority (70.3%) of the respondents reported a sleep efficiency of more than 85%, which included 72.7% of men and 68% of women. There was no significant association ($P=0.58$) between sleep efficiency and gender. Regarding Daytime dysfunction, 12.5% of men and 5.5% of women said they had no daytime dysfunction, 53.1% of men and 61.5% of women said they had dysfunction of a score of 1, making up the majority (57.4%) respondents. There was no significant association ($P=0.22$) between daytime function and gender. There were, 20.3% of respondents (19.5% of men and 21.1% of women) reporting that their subjective sleep quality was very good and 60.9%, 16.8%, and 2.0% of the respondents, respectively, reported having moderately excellent, moderately

terrible, and very poor sleep quality. There was no significant association ($P=0.95$) between subjective sleep quality and gender. Also, 23.4% of the respondents (22.7% of men and 24.2% of women) reported having 0 scored sleep latency or the time it takes them to fall asleep. 41.4%, 27.7%, and 7.4% of the respondents, respectively, reported sleep latencies of score 1, 2, and 3. There was no significant association ($P=0.36$) between sleep latency and gender. In terms of using medication to fall asleep, 84.0% of respondents (82.8% of men and 85.2% of women) said they had not done so in the previous month. 8.6%, 7.0%, and 0.4% of the respondents, respectively, reported using sleep medications less than once a week, once or twice per week, and three or more times per week. There was no significant association ($P=0.15$) between use of sleep medication and gender. A total of 4.3%, 70.7%, 23.8%, and 1.2% of the respondents, respectively, reported having sleep disruption scores of 0, 1, 2, and 3. There was no significant association ($P=0.18$) between sleep disturbance and gender.

Table 3: Lifestyle related factors and sleeping pattern of respondents.

Lifestyle factors which can affect sleep		Gender		Total n (%)	χ^2	P-value
		Male n (%)	Female n (%)			
Use any kind of electronic device such as mobile phone, laptop or TV before sleeping	Never	10 (7.8)	10 (7.8)	20 (7.8)	2.538	0.64
	Almost never	10 (7.8)	5 (3.9)	15 (5.9)		
	Sometimes	24 (18.8)	23 (18.0)	47 (18.4)		
	Fairly often	30 (23.4)	27 (21.1)	57 (22.3)		
	Very often	54 (42.2)	63 (49.2)	117 (45.7)		
Any stress in life affecting sleep	Never	27 (21.1)	14 (10.9)	41 (16.0)	6.802	0.15
	Almost never	22 (17.2)	17 (13.3)	39 (15.2)		
	Sometimes	40 (31.3)	46 (35.9)	86 (33.6)		
	Fairly often	17 (13.3)	23 (18.0)	40 (15.6)		
	Very often	22 (17.2)	28 (21.9)	50 (19.5)		
Consume any kind of caffeine such as tea or coffee at night	Never	56 (43.8)	53 (41.4)	109 (42.6)	2.184	0.70
	Almost never	18 (14.1)	23 (18.0)	41 (16.0)		
	Sometimes	30 (23.4)	28 (21.4)	58 (22.7)		
	Fairly often	17 (13.3)	13 (10.2)	30 (11.7)		
	Very often	7 (5.5)	11 (8.6)	18 (7.0)		
Physical Exercise	No or little exercise	40 (31.3)	56 (43.8)	96 (37.5)	19.88	<0.001
	Once or twice a week	24 (18.8)	42 (32.8)	66 (25.8)		
	More than twice a week	25 (19.5)	12 (9.4)	37 (14.5)		
	Daily	39 (30.5)	18 (14.1)	57 (22.3)		
Substance Abuse	Smoking	13(10.2)	6(4.7)	19 (7.4)	2.786	0.09
	Smokeless tobacco	3(2.3)	0(0.0)	3(1.2)	3.036	0.08
	Alcohol	18(14.1)	14(10.9)	32(12.5)	0.571	0.45
	Any Substance Abuse	8(6.3)	0(0.0)	8(3.1)	8.258	0.004

Table -3 presents Lifestyle related factors and sleeping pattern of respondents. The majority of respondents (42.2% of males and 49.2% of females) reported use of electronic devices frequently right before bed. 7.8% of men and 7.8% of women admitted to never use electronics before bed. No significant association ($P=0.64$) was seen between using any electronic devices such as mobile phone, laptop or TV and gender. The distribution of how often stress interfered with sleep was as follows: never (21.1% of men and 10.9% of women), almost never (17.2% of men and 13.3% of women), occasionally (31.3% of men and 35.9% of women), fairly often (13.3% of men and 18.0% of women), and very often (17.2% of men and 21.9% of women). No significant association ($P=0.15$) was seen between stress in life and gender. Majority (43.8% of men and 41.4% of women) said they never drank caffeine at night. No association ($P=0.70$) was seen between having any kind of caffeine such as coffee or tea at night and gender. Little to no exercising was reported by 31.3% Males and 43.8% and females, 19.5% of men and 9.4% of women reported exercising more than twice per week, while 30.5% of men and 14.1% of women said they exercised every day. There was a significant association ($P<0.001$) between physical exercise and sleep. Among all respondents, 7.4% including, 10.2% of males and 4.7% of females reported smoking with no significant association ($P=0.09$) between Smoking and gender. There was no

significant association ($P=0.08$) between smokeless tobacco and gender. A total of 12.5% of the respondents including 14.1% of males and 10.9% of females reported alcohol addiction. There is no statistically significant association ($P=0.45$) between gender and alcohol addiction. Overall there was a significant association ($P=0.004$) between substance abuse and gender.

Table 4: Sleeping habits of respondents and other factors by gender.

Other factors which can affect sleep pattern	Responses	Gender		Total	χ^2	p-value
		Male	Female			
Sleep environment is calm and quiet	Always	53 (41.4)	58(45.3)	111(43.4)	1.833	0.40
	Never	7(5.5)	3(2.3)	10(3.9)		
	Often	68(53.1)	67(52.3)	135(52.7)		
Have a bed partner or roommate	No bed partner or roommate	62(48.4)	39(30.5)	101(39.5)	11.013	0.01
	Partner/roommate in other room	6(4.7)	3(2.3)	9(3.5)		
	Partner in same room, but not same bed	47(36.7)	65(50.8)	112(43.8)		
	Partner in same bed	13(10.2)	21(16.4)	34(13.3)		
Papers, assignments and research papers due	Never	33(25.8)	34(26.6)	67(26.2)	2.099	0.71
	Almost never	19(14.8)	13(10.2)	32(12.5)		
	Sometimes	50(39.1)	50(39.1)	100(39.1)		
	Fairly often	17(13.3)	23(18.0)	40(15.6)		
	Very often	9(7.0)	8(6.3)	17(6.6)		
Worried about tests and exams	Never	31(24.2)	13(10.2)	44(17.2)	37.346	<0.001
	Almost never	18(14.1)	4(3.1)	22(8.6)		
	Sometimes	51(39.8)	41(32.0)	92(35.9)		
	Fairly often	20(15.6)	38(29.7)	58(22.7)		
	Very often	8(6.3)	32(25.0)	40(15.6)		
Felt isolated	Never	26(20.3)	19(14.8)	45(17.6)	3.047	0.55
	Almost never	24(18.8)	19(14.8)	43(16.8)		
	Sometimes	43(33.6)	54(42.2)	97(37.9)		
	Fairly often	20(15.6)	22(17.2)	42(16.4)		
	Very often	15(11.7)	14(10.9)	29(11.3)		
Wake up with headache	Never	60(46.9)	38(29.7)	98(38.3)	11.533	0.02
	Almost never	29(22.7)	29(22.7)	58(22.7)		
	Sometimes	26(20.3)	47(36.7)	73(28.5)		
	Fairly often	10(7.8)	9(7.0)	19(7.4)		
	Very often	3(2.3)	5(3.9)	8(3.1)		
Feel irritated after a poor sleep	Never	18(14.1)	15(11.7)	33(12.9)	13.806	0.008
	Almost never	23(18.0)	6(4.7)	29(11.3)		
	Sometimes	46(35.9)	53(41.4)	99(38.7)		
	Fairly often	21(16.4)	34(26.6)	55(21.5)		
	Very often	20(15.6)	20(15.6)	40(15.6)		
Constantly feel the need to lie down throughout the day	Never	21(16.4)	18(14.1)	39(15.2)	3.789	0.43
	Almost never	34(26.6)	24(18.8)	58(22.7)		
	Sometimes	44(34.4)	46(35.9)	90(35.2)		
	Fairly often	16(12.5)	23(18.0)	39(15.2)		
	Very often	13(10.2)	17(13.3)	30(11.7)		
Wake up too early in the morning and have trouble falling back asleep	Never	43(33.6)	39(30.5)	82(32)	1.733	0.78
	Almost never	25(19.5)	31(24.2)	56(21.9)		
	Sometimes	37(28.9)	35(27.3)	72(28.1)		
	Fairly often	16(12.5)	13(10.2)	29(11.3)		
	Very often	7(5.5)	10(7.8)	17(6.6)		
Wake up feeling tired even though had slept for 7-8 hours	Never	33(25.8)	21(16.4)	54(21.1)	6.627	0.15
	Almost never	29(22.7)	27(21.1)	56(21.9)		
	Sometimes	37(28.9)	45(35.2)	82(32)		
	Fairly often	16(12.5)	26(20.3)	42(16.4)		
	Very often	13(10.2)	9(7)	22(8.6)		
Fall asleep in social settings such as parties or movies	Never	56(43.8)	61(47.7)	117(45.7)	3.079	0.54
	Almost never	31(24.2)	27(21.1)	58(22.7)		
	Sometimes	30(23.4)	24(18.8)	54(21.1)		
	Fairly often	7(5.5)	7(5.5)	14(5.5)		

	Very often	4(3.1)	9(7)	13(5.1)		
Feel paralyzed during sleep or on awakening	Never	78(60.9)	63(49.2)	141(55.1)	10.275	0.03
	Almost never	19(14.8)	34(26.6)	53(20.7)		
	Sometimes	23(18)	15(11.7)	38(14.8)		
	Fairly often	5(3.9)	4(8.6)	16(6.3)		
	Very often	3(2.3)	5(3.9)	8(3.1)		

Sleeping habits of respondents and other factors by gender are presented in **Table-4**. A total of 43.4% of the respondents including 41.4% of males and 45.3% of females reported that the sleep environment was calm and quiet. No significant association ($P=0.40$) was observed between sleep environment being calm/quiet and gender. Overall 39.5% of the respondents including 48.4% of men and 30.5% of women reported having a bed companion or roommate. The distribution was different for respondents who shared a bed but not a room with a spouse or flat mate (36.7% of men and 50.8% of women), who shared a bed (10.2% of men and 16.4% of women), or who shared a room (4.7% of men and 2.3% of women). Statistically significant association was observed ($P<0.01$) between having a bed partner or roommate and gender. The frequency of papers, assignments, and research papers due varied among the participants. There were 39.1% of males and 39.1% of females reporting that these academic tasks occasionally interfered with their ability to sleep. No significant association ($P=0.71$) was observed between having papers, assignment and research papers due and gender. Exam and test anxiety differed with the gender. Overall 17.2% respondents including 24.2% males and only 10.2% females were never worried about their exams. Males reported quite often (6.3%) and very frequently (6.3%), whereas females were reported worrying occasionally (32.0%) and very frequently (25.0%). Statistically significant association was observed ($P<0.001$) between worried about tests and exams and gender.

Majority of participants reported feeling isolated occasionally, and there were no gender differences in these feelings. Additionally, 33.6% of men and 42.2% of women, or 37.9% of the respondents, said they occasionally felt alone. No significant association ($P=0.55$) was observed between felt isolated and gender. There were 46.9% of men and 29.7% of women who reported waking up with no headaches. Statistically significant association ($P<0.02$) was observed between waking up with headache and gender.

There were some gender disparities when it came to feeling irritated after a bad night's sleep, with 35.9% of men and 41.4% of women experiencing it occasionally. Females were more likely than males (16.4%) to report feeling irritated on a fairly regular basis (26.6%). Statistically significant association was observed ($P<0.008$) between irritation after poor sleep and gender. Several respondents mentioned a need to lie down constantly during the day. The majority, 34.4% of men and 35.9% of women, said they occasionally lie down. In addition, 12.5% of men and 13.3% of women said they

felt the desire to lie down pretty frequently, compared to 26.6% of men and 18.8% of women who said they felt it virtually seldom. Additionally, 17.5% of women and 10.2% of men said they experienced it frequently. No significant association ($P=0.43$) was observed between constantly feel the need to lie down throughout the day and gender. Majority, 28.9% of men and 27.3% of women, said they occasionally experienced it. Furthermore, 19.5% of males and 24.2% of females reported nearly never feeling it, compared to 33.6% of men and 30.5% of women who said they had never had it. Additionally, 10.2% of women and 12.5% of men said they had it pretty frequently. No significant association ($P=0.78$) was observed between waking up too early and having trouble falling back asleep and gender.

Despite getting between seven and eight hours of sleep, many individuals reported feeling exhausted when they woke up. The majority, 28.9% of men and 35.2% of women, said they occasionally experienced it. Additionally, 25.8% of men and 21.1% of women said they had never experienced it, while 22.7% of men and 21.1% of women said they had experienced it almost seldom. Additionally, 10.2% of men and 7% of women said they experienced it very often, while 12.5% of men and 20.3% of women said they experienced it frequently. No significant association ($P=0.15$) was observed between waking up feeling tired even though a sleep of 7-8 hours and gender. Majority, 43.8% of men and 47.7% of women, claimed they could never fall asleep in such circumstances. Additionally, while 23.4% of men and 18.8% of women said they occasionally fell asleep, 24.2% of men and 21.1% of women said they never did. No significant association ($P=0.54$) was observed between falling asleep in social settings such as parties or movies and gender. A total of 60.9% of men and 49.2% of women reported a feeling of being paralyzed during sleep or on awakening. In addition, 14.8% of men and 26.6% of women said they nearly never experienced it, while 18% of men and 11.7% of women said they experienced it occasionally. In addition, 2.3% of males and 3.9% of females reported having it very often, while 3.9% of males and 8.6% of females reported experiencing it pretty frequently. A statistically significant association was observed ($P<0.03$) between feeling paralyzed during asleep or on awakening and gender.

DISCUSSION

The cross-sectional study included 256 college going youths (128 males and 128 females) representing all socio-demographic characteristics for studying the pattern and quality of sleep among youth students and to identify life style related contributing factors with their

gender differentials. Approx. 63% of students experience disturbed sleep as compared to 55.8% prevalence of disturbed sleep in an earlier study conducted in Tamil Nadu.^[5] Also, this percentage is higher than that reported in an earlier study conducted in Tripura.^[7] Surprisingly; present study has shown no significant association between changes in quality of sleep and pattern reported after Covid-19 pandemic. This is in contrast to findings of earlier studies.^[4,5] The average duration of sleep was 6.67 hours and 76.2% of the individuals slept for less than 7 hours of sleep during 24 hours. Late night sleep was a common feature among both males and females. Naps during day times were reported by 51.2% of the total participants. Sleep efficiency scores above 85% were achieved by the majority of subjects (70.3%). About 64% of respondents experienced a change in sleep patterns after COVID-19 pandemic. Among all, 86.4% respondents reported use of gazettes before sleeping and 75.8% reportededly felt irritated after a poor sleep, with more prevalence among women (83.6%) than that in men (67.9%). More male subjects were found engaged in physical exercise than female counterparts. About 74 % individuals reported to be worried about tests or exams, with more prevalence in females (86.7%) than male (61.7%). In contrast to other streams, medical students had the highest percentage (37.9%) of sleep disturbances. No significant variability was found in the sleep patterns of the male and female participants. The study reported significant change in sleep patterns of males and females may be attributed to involvement of boys in physical exercises as compared to girls. Physical exercise were also found to be strongly correlated with their sleep patterns in an earlier study.^[3]

The study has several strengths in terms of equal participation of male and female subjects in the study, which made it more effective to compare factors between them. The study included additional factors other than those present in the PSQI Scale which can potentially affect sleep pattern. This study has also the strength of incorporating several potential additional risk factors of sleep disturbance which are not yet considered in domains of scale available. This study accepted challenges of examining students' sleep patterns during and just after Covid-19 pandemic. The present study may be useful for designing public health interventions and developing educational programs for young individuals to promote quality sleep.

The study has some limitations as the study could cover only 256 college-going students of a particular region/university due to time constraints, hence its results can't be generalized due to less sample size. Findings are based on responses of study subjects and facts could not be verified, so causal inferences can't be drawn. The study also suffers a lack of representativeness due to non-responses or reluctance in responding by study subjects which might be due to their busy academic schedules.

CONCLUSIONS AND SUGGESTIONS

The findings of our study indicated that the sleep quality of male and female youths do not differ significantly but sleep patterns among male and female students differ significantly in terms of some selected outcomes. Sleeping habits, and worries regarding exams also varied significantly with gender. However, there was a significant association between substance abuse and gender and also with physical exercise and modifying other lifestyle factors which can affect sleep. The study suggests that better quality sleep has to be encouraged by generating awareness about risk factors of sleep disturbance. Also, a healthier lifestyle in terms of physical activities and reducing academic stress should be promoted for both boys and girls to improve their sleep quality. Community-based health education programmes should be organized to promote sleep hygiene practices and quality sleep habits.

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