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Original Research Article

Sleep pattern and life style habits in medical students and interns

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ABSTRACT

Introduction: Sleep pattern and behavior plays an important role in personality. It becomes very essential in profession where decision making has to be precise. Health care profession is always a challenging filed, with evolving science every day the people in this profession are at risk of sleep deprivation either due to work schedule or stressors. Hence sleep pattern study in their study period will help in predicting pattern developed in sleep.
Materials and Methods: 261 subjects participated in study constituting self-reporting questionnaire which included sleepiness, acute insomnia and chronic insomnia, activities in bed and sleep environment responses was obtained which determined life style habits and individual sleep pattern and behavior
Results: 40% of study participants had sleep onset delay more than 30minutes and among them 4% of participants needed pharmacological intervention. On comparison among different phases of course and interns using ANOVA there was no statistical significant difference in sleep patterns but interns had poor sleep quality as per the Pittsburgh Sleep Quality Index (PSQI) criteria.
Conclusion: The study indicated altered sleep patterns in the group of interns and in first year students of the course though it was not statistically significant.

1. Introduction

Healthy sleep is an indicator of healthy behavior that is largely overlooked by the existing health policies or clinicians. The view that sleep is not an integral part of healthy behavior, however, is beginning to change.[1] In developed countries they reached to consensus that sleep deprivation and sleep disorders have significant impact on public health. This has promoted them to implement adequate sleep as a national health priority for healthy population.[2]These developments are indicating that the response is due to large amount of evidence presented with unhealthy sleep and its association with increased morbidity and mortality.

There is strong evidence from a number of studies that support sleep behavior as an important component of health. Sleep like diet represents an essential biological entity met by engaging in particular set of behaviors. These set of behaviors are modifiable and if potentially intervened one can modify the sleep pattern. These modifiable factors which are at individual's level can be influenced by social, economic and environmental factors.

Difficulty in sleep is a growing concern and present statistics suggest that one-third of the adult population is affected. Western data and studies from Japan have reported prevalence of insomnia related symptoms ranging from 10% to 48%. This difference is mainly due to criteria used in defining insomnia and different socio-cultural background.[3,4]

The problems related to sleep disorder form a growing concern and this in medical profession also has its impact. Studies have shown that unrestricted hours of duty adversely affect the performance of residents.[5,6]Landrigan et al in their study has demonstrated significant reduction in errors by interns after introduction of intervention schedule that

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provided essential break and reducing number of hours on duty per week.[7]

Sleep pattern and behavior can affect the cognitive ability and psychomotor performance of the students and interns. These functions which are vital for medical students and interns need to be addressed as they are going to take care of the unhealthy or diseased population. Hence this study is planned to be conducted in medical college and study the pattern of sleep and life style habits of students. Since it is a modifiable behavior pattern appropriate measures can be addressed and healthy life adopted

2. Objectives

1. To determine self-reported sleep pattern and life style behavior among medical students and interns

3. Methodology

3.1. Study design

Observational cross-sectional study

3.2. Study setting

Department of Physiology, Pushpagiri Institute of Medical Sciences & Research Centre, Thiruvalla.

3.3. Sample size

261.

3.4. Sampling method

Purposive or convenient sampling.

3.5. Inclusion criteria

All medical students from 1^{st} semester to 9^{th} semester and interns.

3.6. Exclusion criteria

Subjects who are on medications or diagnosed with psychological illness and other disease which will affect their sleep.

3.7. Study duration

2 month's (June- July 2018).

3.8. Study procedure

After obtaining informed consent all students and interns fulfilling inclusion criteria were provided detailed information about the study and the option to withdraw from study. The participants were interviewed in department of physiology on reporting for the study. Baseline anthropometric parameters like height and body weight were recorded by standard procedure. They were being provided with self-administered questionnaire which include d various demographic parameters, sleep patterns and life style habits incorporated in it.

3.9. Study tool

Pittsburgh Sleep Quality Index[8](PSQI)

Pittsburgh sleep quality index is a self-report questionnaire that assesses sleep quality over one month time interval. It consists of 19 individual themes and 7 components which help in deducing global score. Each item is rated on a 0-3 interval scale. Then the global score is calculated using all seven components score. A total score of "5" or greater is indicative of poor sleep quality. The score helps in understanding three factors which include sleep efficiency, perceived sleep quality and daily disturbances.

A self-reporting questionnaire including sleepiness, acute insomnia and chronic insomnia, activities in bed and sleep environment involving responses was obtained which will help in understanding life style habits and understand individual sleep pattern and behavior better. This test is developed and validated by Grandner MA et al.[9]in the article "The Development of a Questionnaire to Assess Sleep-Related Practices, Beliefs, and Attitudes".

3.10. Statistical analysis

Data was expressed in frequency tables for distribution of nominal variables. Mean and standard deviation (SD) were used for presenting numeric variables. Student's t-test, one-way ANOVA and appropriate test for pot hoc analyzing were used. The significance level was at $P<0.05$.

4. Observation and Results

The number of participants who completed the response was 261 Gender distribution as shown in Table 1 had predominantly females composing 69% of study population.

Table 1: Gender wise distribution

Gender	Frequency	Percent
Male	82	31.4
Female	179	68.6

Table 2 depicts distribution of population semester wise. We had fair enough response from final year and interns group and a major part of the response coming from first three groups of students.

Table 3 is presented with descriptive distribution of PSQI components showing the mean age weight and sleep duration. Their mean time of getting sleep varied between

Table 3: Descriptive distribution of PSQI components

Variable		**Mean**	**SD**	
Age		21.32	1.684	
Height (in centimeters)		170.130	97.6083	
Weight (in kilograms)		57.843	11.1739	
1. When have you usually gone to bed?		9.6539	3.56736	
2. How long (in minutes) has it taken you to fall asleep each night?		16.1054	29.68387	
3. What time have you usually gotten up in the morning?		6.0270	1.91033	
4. [A] How many hours of actual sleep did you get at night?		6.4942	1.22801	
4. [B] How many hours were you in bed?		7.0552	1.40862	
5. During the past month, how often have you had trouble sleeping because you	**Not during the past month (%)**	**Less than once a week (%)**	**Once or twice a week (%)**	**Three or more times a week (%)**
A. Cannot get to sleep within 30 minutes	157 (60.2)	63 (24.1)	34 (13)	7 (2.7)
B. Wake up in the middle of the night or early morning	122 (46.7)	75 (28.7)	55 (21.7)	9 (3.4)
C. Have to get up to use the bathroom	170 (65.1)	62 (23.8)	23 (8.8)	6 (2.3)
D. Cannot breathe comfortably	228 (87.4)	17 (6.5)	16 (6.1)	0
E. Cough or snore loudly	229 (87.7)	20 (7.7)	11 (4.2)	1 (0.4)
F. Feel too cold	117 (44.8)	84 (32.2)	54 (20.2)	6(2.3)
G. Feel too hot	194(74.3)	47(18)	19 (7.3)	1 (0.4)
H. Have bad dreams	135 (51.7)	88 (33.7)	33 (12.6)	5 (1.9)
I. Have pain	220 (84.3)	32 (12.3)	9 (3.4)	0
6. During the past month, how often have you taken medicine (prescribed or "over the counter") to help you sleep?	253 (96.9)	6 (2.3)	1 (0.4)	1 (0.4)
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?	172 (65.9)	53 (20.3)	29 (11.1)	7 (2.7)
8. During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done?	120 (46)	86 (33)	40 (15.3)	15 (5.7)
	Very good	**Fairly good**	**Fairly bad**	**Very bad**
9. During the past month, how would you rate your sleep quality overall?	102 (39.1)	127 (48.7)	29 (11.1)	3 (1.1)

Table 2: Distribution based on different semester

	Frequency	**Percent**
1-2nd semester	61	23.4
3-5th semester	65	24.9
6-7th semester	74	28.4
8-9th semester	30	11.5
Interns	31	11.9

15 minutes to 30 minutes. Around 40% of the population reported not get into sleep within thirty minutes and 4% of the population reported to have taken pharmacotherapy due to delay in sleep latency.

Table 4 is descriptive data of sleep practices and sleep environment to look for chronic association with sleep disorders. The prominent observation was that change in sleep schedule was a prominent cause for change in sleep habit and also worrying in the bed was another important component which was found be an important risk factor for altered sleep habits.

Table 5 and Table 6 shows the classification of subjects based on PSQI score 53% of the response suggested had poor sleep quality and this was observed more common in interns and followed by final year students to first two semesters students. The difference among the group was not statistical significant. Post hoc analysis showed the difference in the group of interns was significantly different from all other groups.

5. Discussion

Sleep is an important component of health and healthy sleep is essential for normal human behavior. Adequate sleep has been included as a national health priority by many

Table 4: Sleep practices and the sleep environment

Variable	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
If I am feeling sleepy during the day:					
Sleep more or better	33 (12.6)	32. (12.3)	64 (24.5)	104 (39.8)	28 (10.7)
Take a nap	22(8.4)	23 (8.8)	46 (17.6)	122(46.7)	48 (18.4)
Increase caffeine	86 (33)	70 (26.8)	49 (18.8)	44 (16.9)	12 (4.6)
Increase exercise	72 (27.6)	57 (21.8)	77 (29.5)	49 (18.8)	6 (2.3)
I never feel sleepy	123 (47.1)	92 (35.2)	32 (12.3)	6 (2.3)	8 (3.1)
If I were having trouble sleeping tonight:					
Stay in bed	27 (10.3)	32(12.3)	64 (24.5)	100 (38.3)	38 (14.6)
Do something in bed	42 (16.1)	46 (17.6)	73 (28)	90 (34.5)	10 (3.8)
Get up and do something	49 (18.8)	65 (24.9)	77 (29.5)	61 (23.4)	9 (3.4)
Eat/drink	73 (28)	67 (25.7)	66 (25.3)	46 (17.6)	9 (3.4)
Drink Alcohol	209 (80.1)	37 (14.2)	10 (3.8)	3 (1.1)	2 (0.8)
Smoke	213 (81.6)	35 (13.4)	9 (3.4)	2 (0.8)	2 (0.8)
Increase caffeine	157 (60.2)	54 (20.7)	33 (12.6)	13 (5)	4 (1.5)
Get up and start the day	93 (35.6)	65 (24.9)	70 (26.8)	29 (11.1)	4 (1.5)
If I were having trouble sleeping over a period of time:					
Medications	135 (51.7)	60 (23)	46 (17.6)	16 (6.1)	4 (1.5)
Mattress	71 (27.2)	47 (18)	83 (31.8)	54 (20.7)	6 (2.3)
Prioritize bed time	71 (27.2)	47 (18)	83 (31.8)	54 (20.7)	6 (2.3)
Lighting	48 (18.4)	46 (17.6)	54 (20.7)	87 (33.3)	26 (10)
Temperature	42 (16.1)	42 (16.1)	63 (24.1)	92 (35.2)	22 (8.5)
Change sleep schedule	52 (19.2)	37 (14.2)	63 (24.1)	88 (33.7)	21 (8)
Reduce caffeine	66 (25.3)	48 (18.4)	65 (24.9)	56 (21.5)	26 (10)
Prioritize sleep	39 (14.9)	29 (11.1)	54 (20.7)	92 (35.2)	47 (18)
I do the following in bed:					
Read	37 (14.2)	40 (15.3)	23 (8.8)	128 (49)	33 (12.6)
Watch TV/Mobile	25 (9.6)	12 (4.6)	24 (9.2)	124 (47.5)	76 (29.1)
Eat/Drink	77 (29.5)	69 (26.4)	34 (13)	70 (26.8)	11 (4.2)
Worry / start thinking	33 (12.6)	26 (10)	49 (18.8)	107 (41)	46 (17.6)
Argue/angry	84 (32.2)	71 (27.2)	53 (20.3)	37 (14.2)	16 (6.1)
Work	81 (31)	71 (27.2)	43 (16.5)	53 (20.3)	13 (5)
Physical environment:					
Physically comfortable	8 (3.1)	9 (3.4)	39 (14.9)	148 (56.7)	57 (21.8)
Dark	12 (4.6)	28 (10.7)	46 (17.6)	115 (44.1)	60 (23)
Comfortable temperature	9 (3.4)	12 (4.6)	40 (15.3)	131 (50.2)	69 (26.4)
Quiet	14 (5.4)	17 (6.5)	42 (16.1)	120 (46)	68 (26.1)

Table 5: PSQI score

PSQI Sleep Score	Frequency (%)
<5	123 (47.1)
>=5	138 (52.9)

advanced nations. Daily hectic work schedule, healthy or unhealthy competition along with sleep deprivation contributes the major cause of stress among medical students which contributes to their deteriorating health standards.

The present study reviewed of sleep pattern based on questionnaire and habits associated with sleep and its environment. The mean age group of study was 21 years and mean weight of participants was 58 kilograms. The representation of females in the study sample was 69% and 31% constituted of males. The difference in the result obtained based on gender was not significant. Our results are similar to results obtained by E Voltmer et al.[10] and colleagues and they observed that female participants had higher representation in their study with lesser males. In contrast to our study Dyrbye L N et al[11] reported high risk among female students who are more prone to psychological distress. This observation of gender difference among medical students and interns is almost universal as it is observed that females tend to over commit and over exhaust to work schedule which affects their sleep pattern and hence prone for psychological ailments.

Table 6: Distribution of sample based on PSQI score

Year	PSQI Category	Frequency	Percent	P value
	Normal (< 5)	27	44.3	
1-2nd semester	Poor sleep Quality (>= 5)	34	55.7	
	Total	61	100.0	
	Normal (< 5)	33	50.8	
3-5th semester	Poor sleep Quality (>= 5)	32	49.2	
	Total	65	100.0	
	Normal (< 5)	41	55.4	
6-7th semester	Poor sleep Quality (>= 5)	33	44.6	0.1056
	Total	74	100.0	
	Normal (< 5)	15	50.0	
8-9th semester	Poor sleep Quality (>= 5)	15	50.0	
	Total	30	100.0	
	Normal (< 5)	7	22.6	
Interns	Poor sleep Quality (>= 5)	24	77.4	
	Total	31	100.0	

Sleep quality index score suggested that nearly 53% of the study population had altered sleep habits in terms of sleep efficiency, quality of sleep perceived and its disturbances, in last one month. This type of pattern was almost uniform in all the semester of students. The batch of interns had significant amount of altered sleep habits and are more prone for stress as observed by our results. Similar results were expressed by other studies which had reported that anxiety and depression tend to be on the rise after enrollment in medical college by Rosal et al.[12] though these measures are obtained by different scales it is common trend to notice that a healthy adult enrolling in the college was led to burnout and emotional turmoil.

In an attempt to determine sleep practice and observe sleep environment among students we had response obtained which displayed that if they failed to get sleep they would start worrying as one of the major concerns among the students. They also restrained from changing the sleep schedule if they failed to get adequate sleep during pre-determined schedule. Less than 2% of the participants suggested preferring medications for adequate sleep.

This attempt to screen medical students and interns may have limited utility because sleep and its disorders have diverse range. The ability to characterize individual's sleep and its behavior would be challenging to be predicted by simple questionnaire. This study has paved way for opportunities where simple response would help in identifying risk factors and early identification of those factors would help in developing preventive measures

6. Conclusion

Sleep is an essential component of healthy behavior. Our study results indicates that sleep disturbance is a growing concern among medical students and this is more common in the first year and later in the final year and during interns hip. The study also tried to correlate sleep environment and sleep practice which was inconclusive. Sleep deprivation was seen more among the interns who are at the verge of burnout due to the nature of schedule and working pattern.

The study conducted in medical college of central Kerala region about sleep pattern and life style habits included students of all the phases from first year to interns. Female participation in the study was greater than males. Based on PSQI sleep score, more than 50% of the students had disturbances in sleep which suggest that these students and interns had decreased sleep quality and efficiency in sleep also compromised. The study results also suggested that sleep environment and sleep practices did not affect much of the habits of sleep which lead to the sleep disturbances. Sleep disturbance will be a major concern in academic as well as professional development. As this risk factor is a modifiable risk factor, if this concern is addressed early in their life, proper knowledge and precautions can be provided for healthy life behavior.

7. Source of Funding

None.

8. Conflict of Interest

None.

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