Original article:

Study of the factors associated with poor sleep among medical students

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ABSTRACT

Aims and Objectives: This study was conducted to assesss the factors which affect the quality of sleep among undergraduate medical students.

Materials and Methods: This work is a cross-sectional questionnaire-based study conducted at VIMS , Pawapuri during the month of Januaury in 2017 .The participants in this study were 307 undergraduate M.B.B.S students of the 1st,2nd ,3rd and 4th academic year of this college . A self-administered questionnaires were distributed to the students which collected information regarding participants'age, gender,habitat ,physical activity ,body mass index, addictions, year of study, residence and background , Pittsburg sleep quality index (PSQI) score and Epworth sleepiness scale .

Result . .It was found that stress and and regular tea intake was very significantly associated with poor sleep quality whereas late night internet surfing and mobile usage for more than 1 hrs before sleep, irregular work and rest cycle and physical inactivity had significant association with poor sleep

Conclusions: A very high prevalence of stress and tea addictions was associated with poor sleep quality..

Keywords:, Medical Students, factors, Pittsburgh Sleep Quality Index(PSQI), Sleep Quality, Epworth Sleepiness Scale (ESS)

INTRODUCTION

Sleep is serves a restorative homeostatic function and appears to be crucial for normal thermoregulation and energy conservation [(1).] Sleep deprivation and symptoms related to sleep disorders have not only been ignored but also inadequately understood. The prevalence of sleep disorders in the general population has been estimated to be 15% -- 35% [2,3].Medical students are especially vulnerable to poor sleep, perhaps due to the long duration and high intensity of study, clinical duties that include overnight on-call duties, work that can be emotionally challenging, and lifestyle choices[(.4)]

Research on sleep disturbances in undergraduate medical students is of particular interest because of the known relationship between sleep and mental health[(5)] and the concern that the academic demands of medical training can cause significant stress[.(6,7)]. A large body of evidence supports the notion that good quality sleep is important for optimal neurocognitive and psychomotor performance as well as physical and mental health[.(8)]

Many factors determine sleep quality, and some of the important ones are age,gender, habitat, body mass index (BMI),physical activity or sports, smoking[.(9).]Recent studies have demonstrated that the sleep–wake cycle of medical students is characterized by insufficient sleep duration, delayed sleep onset, and occurrence of napping episodes during the day [(10, 11)]which has been found

to affect cognitive function in medical students [12]. Moreover, multiple studies have indicated a high correlation between sleep duration and performance in some activities and in subjective alertness [13, 14]..

Despite inherent importance of sleep, there is limited information about sleep behavior and sleep disturbances in medical college students[15].This study was designed to assess the various factors which affect the quality of sleep among the undergraduate medical students .

METHODOLOGY

STUDY DESIGN : This cross-sectional study was conducted at VIMS in Pawapuri during the month of Januaury in 2017 .The participants in this study were 307 undergraduate M.B.B.S students of the 1st,2nd ,3rd and 4th academic year of this college . Among them, 72 were female and 235 were male. Students who were willing to participate were given a brief description about the study and its aims & objectives. Verbal consent of each student was taken and were assured about the confidentiality . Students with chronic diseases or sleep disorders were excluded . The ethics committee of the institute approved the study. Recruitment and collection of data continued for four weeks in the month of January A self-administered questionnaires were distributed to the students which collected information regarding participants'age, gender,habitat ,physical activity ,body mass index, addictions, year of study, residence and background , Pittsburg quality of sleep index (PQSI) score and Epworth daytime sleepiness scale (ESS).The recruitment and collection process was carried out under the supervision of the authors and the help of 10 previously trained senior medical students . After completion, the questionnaires were collected from the students and the incomplete ones were removed from the study.

The analysis was performed using Graphpad instat prism 6. T-test was then used for processing quantitative information and chisquare test for the qualitative information.

Statistical significance was accepted at $P<0.05$. .Instrumental tools used in the study

Pittsburg Sleep quality Index (PSQI)[16] It is a self report instrument to assess the quality of sleep. The Pittsburgh sleep quality index (PSQI), a self-rated questionnaire that assesses sleep quality over a time interval was adopted in the survey. Seven properties of sleep were evaluated by this questionnaire:

1. Sleep quality of the individual 2. Time it takes for an individual to sleep 3. Duration of sleep 4. Sleep efficiency 5. Bedtime problems 6. Use of sleeping medication 7 Impairment in daily functioning The scores for each question range from 0 to 3, with 0 indicating the highest sleep quality and 3 indicating the lowest one. The seven component scores are then added to yield a global PSQI score in the range of 0 to 21; the higher the score is, the worse the sleep quality. A global score equal or greater than 5 indicates poor sleep quality in the past month.

Epworth Sleepiness Scale (ESS)[17]: 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.

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RESULT

A total of 307 responses were obtained of which 67.42 % were considered poor sleepers. The mean age of the participants, which ranged from 17 to 24 years, was 20.54 . Among this population, 235 (76.54%) were male and 72 (23.45%) were female. The students were distributed among the four academic years. Daily sleeping hours of 4 - 6 hours were reported by 213 (69.38 %) of the participants and 7 - 10 hours by 66 (21.49%). A small numbers of students 28(9.12%) slept less than 4 hours or more than 10 hours . Among the students, 100 (32.54%) had normal PSQI scores and 207 (67.42%) had PSQI > 5 scores.indicating poor quality. Daytime sleepiness was assessed using the ESS. 193 students had ESS <10 while 114 (37%) students had ESS >10 indicating increased daytime sleepiness among them.**TABLE 1** presents the complete demographic characteristics and other study variables.

TABLE 2 presents the analysis of the study variables with PSQI scores. A multivariate analysis of sleep disturbance and other study variables revealed that girls had poorer sleep quality than boys. sleep quality also had a significant relationship with , habitat, sleeping hours and daytime sleepiness The prevalence of sleep disorders was higher among day scholars (90.1%) as compared to those who lived in the hostel .Sleep quality was significantly poor among students having ESS>10. 114.students had daytime sleepiness of which 91.2% had poor quality which was very significant (p<.0001).However sleep quality was not significantly associated with the academic year and the body mass index of the students .

TABLE 3. Lists the factors associated with sleep problems among medical students as reported by them.It was found that stress and and regular tea intake was very significantly associated with poor sleep quality whereas late night internet surfing and mobile usage for more than 1 hrs before sleep, irregular work and rest cycle and physical inactivity had significant association with poor sleep .186 medical students had stress related to their studies and academic performances while 21 students had it because of some relationship problems. Only 6 students reported of having some health related stress issues. Out of these 213, 176 had sleep problems.73 students had late night internet surfing habit.for more than 2 hours prior going to sleep of which 57 had sleep problems.127 students talked on mobiles continuously for >1 hour regularly before going to sleep.Among the poor sleep category students,82 reported as having irregular schedules,79 had smoking addictions,71 did not do any physical activity or exercise regularly. These were all significantly having negative impact on their sleep quality. 80 students had reported of having of not having proper sleeping environment of which 59 student had poor sleep and 21 had PSQI<5 However this was not significant.Smoking habits was also not significantly associated.

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Table 1: Demographic Characteristics and Other Variables of the Study Population

Variables		**NO(%)**
GENDER	MALE	235 (76.5)
	FEMALE	72 (23.4)
ACADEMIC YEAR		
	FIRST	90(29.3)
	SECOND	72(23.4)
	THIRD	61 (19.9)
	FOURTH	84 (27.4)
HABITAT		
	HOSTEL	274 (89.3)
	HOME	33 (10.7)
BMI		
	<18.5	61(19.9)
	18.5-24.9	135 (44)
	25- 29.9	73 (23.8)
	>30	38 (12.4)
SLEEP HOURS		
	4-6	213 (69.4)
	7-10	66 (21.5)
	OTHERS	28 (9.1)
PSQI		
	<5 (NORMAL)	100 (32.6)
	≥ 5 (ABNORMAL)	207(67.4)
ESS		
	<10(NORMAL)	193 (62.9)
	≥10 (ABNORMAL)	114 (37.1)

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Table 2. Analysis of PSQI Scores With Other Study Variables

VARIABLES		PQSI < 5	PQSI ≥ 5	TOTAL	P VALUE
SEX					<.05
	MALE	84 (35.74)	151(64.26)	235	
	FEMALE	16 (22.22)	56(77.77)	72	
ACADEMIC YEAR					>.05
	FIRST	24 (26.66)	66 (73.33)	90	
	SECOND	29 (40.28)	43(59.72)	72	
	THIRD	28(45.90)	33 (54.1)	61	
	FOURTH	19(22.62)	65(77.38)	84	
HABITAT					<.05
	HOSTEL	97 (35.4)	177 (64.5)	274	
	HOME	3 (9.1)	30 (90.1)	33	
BMI					>.05
	< 18.5	21(34.4)	40 (65.6)	61	
	18.5 – 24.9	36(26.7)	99 (73.3)	135	
	25 – 29.9	27 (37)	46 (63)	73	
	>30	19 (50)	19 (50)	38	
SLEEP HOURS(in hrs)					<.05
	4-6	55 (25.8)	158 (74.2)	213	
	7 -10	28 (42.4)	38 (57.6)	66	
	OTHERS	17(60.7)	11 (39.3)	28	
ESS					<.0001
	<10 (NORMAL)	90 (46.6)	103 (53.4)	193	
	>10 (ABNORMAL)	10 (8.8)	104 (91.2)	114	

TABLE 3: Factors Associated With Sleep Problems Among Medical Students

FACTORS	PSQI < 5	PSQI ≥5	TOTAL	P VALUE	Significance
STRESS				<0.0001	S
1. *About studies & result*	35	151	186		
2. *Relationship problems*	3	19	21		
3. *Health conditions*	0	6	6		
Late night internet surfing	16	57	73	0.0315	S
Poor sleeping environment	21	59	80	0.1686	NS
Irregular work/rest schedules	54	82	136	0.2000	S
Tea intake	21	94	115	<0.001	S
Smoking	31	79	110	0.253	NS
Physical inactivity	21	71	92	0.0172	S
Increased mobile usage	49	127	176	0.0488	S

DISCUSSION

In the present study , decreased sleep quality was found to be very common among medical students as 207 (67.42%) students reported poor sleep quality.[18] A high percentage of respondents i.e > 213 (72%) got less than 7 hrs of sleep per night. .Similar findings were shown wali et al [(19)] and another studies in Iran[(20)] Sleep deprivation is associated with a variety of adverse consequences and can result in significant changes in cognitive functioning, short-term memory and concentration [(2)]

In the current study, several factors such as gender, habitat, sleep hours, and daytime sleepiness were associated with sleeping disorder among medical students. Our results were consistent with the findings of Nojomi et al. [(21)].

The results of the present study revealed that female medical students have a higher prevalence of sleep disorder than males,which is in contrast to the findings of PA Giri et al [(8)]

It was interesting to note that day scholars had more sleep problems than the hostellites. This has been attributed primarily to the commuting between college and their residences.

It was found that stress and and regular tea intake was very significantly associated with poor sleep quality whereas late night internet surfing and mobile usage for more than 1 hrs before sleep, irregular work and rest cycle and physical inactivity had significant association with poor sleepsimilar finding were found in a study among Lithuanian students [22] .It was found that 213 students had stress either due academic pressure or relationship issues or health problem , of which 176 had poor sleep which shows that it was having significant negative impact on their sleep. This finding were also reported by Waqas et al.[23] Some students had developed a habits of having >10 cups of tea regularly.which also had signicant bad effect. Late night internet usage of more than 2 hours regularly and talking on mobiles for more than 1 hour continuously prior to going to sleep had a significant negative impact on sleep quality .The ever changing schedules was also a reason for some .A study by Feng G among chinese medical students had similar finding [24] Few students had complained of not having suitable sleeping environment in their hostels as a cause of concern but it was not found to be significantly associated. Few also had smoking addictions.however it was not significantly associated in contrast to the findings of Feng G [24] . This could be due to false reporting by students to hide their addictions. Those students who did not exercise regularly also had poorer sleep quality

As medical colleges strive to provide the optimal learning environment to students, more attention needs to be directed towards improvement of students' quality of life. Medical schools should build reforms in medical education and provide recreation centers in order to minimize the stress among students.This can be achieved by establishing counselling facilities that can serve those with physical and psychological difficulties.Medical students, on the other hand, would also have to identify their problems and seek for an advice from the faculty in order to find solutions for it.

The main limitations of the study is that it is based only on subjective assessment by the respondent. False information may be provided by students answering the questionnaires, and students may also be unable to understand or may misinterpret the questions.

Conclusions

This study reveals a high prevalence of poor sleep quality among medical students.Therefore, undergraduate medical students should be educated about the importance of adequate sleep to their academic performance. The need for further local research on students' sleep is clear. Research in particular should examine on various other factors that may affect the quality and quantity of students' sleep and its effects on academic achievements and solutions that will help students combat sleep difficulties and avert the deleterious effects of sleep deprivation. .

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