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A study of sleep quality among medical interns of a medical college in Western Maharashtra

[1]Megha .S.Bhengra, [2]Rajashri .S.Salamwade

[1] Assistant Professor, [2]Assistant Professor cum statistician

[1]Department of Community Medicine,

[1] Rajarshri Chatrapati Shahu Maharaj Government Medical College, Kolhapur, India.

[2]Department of Community Medicine,

[2] Rajarshri Chatrapati Shahu Maharaj Government Medical College, Kolhapur, India.

Abstract: Background- Medical interns undergo huge amount of pressure. They tend to reduce their amount of sleep and develop altered sleep pattern in an effort to adjust and cope with their workload and stressful environment. Thus, the above situation leads to deprivation of sleep quality.

Objectives: To observe sleep quality assessed by Pittsburgh Sleep Quality Index (PSQI) and to study factors associated with it among study population.

Aim: To determine factors associated with poor sleep quality.

Materials and Methods- This is a cross sectional self-administered questionnaire based study among the 100 medical interns. Data is analysed statistically by MS-Excel 2016 using Chi-square test

Results- out of 100 interns, the majority were having poor sleep quality (53%). Female counterparts were found to be good sleepers (56.90%). Maximum students with sleeping arrangement of sleeping alone in a room were having good sleep quality (70.15%). Most of them having sleep duration of 7-8 hours (65.79%) or more (71.43%) were good sleepers. But those having habit of Coffee intake (62.26%) and regular smoking (92%) were found to be having poor sleep quality. Majority of those doing regular exercises were good sleepers (52.94%).Students spending time on electronic media like mobile or laptop for less than one hour were mostly good sleepers (71.43%).All of the above study factors had P value of <0.05. Among those consuming alcohol on regular basis most of them were having poor sleep quality (97.05%), but there was no statistical significance between interns consuming alcohol and those who did not with P value marginally >0.05.

Conclusion: As there were statistical differences found in gender, sleeping arrangement, sleep duration, coffee intake, smoking habit, regular exercises and use of electronic devices, these factors are related with the sleep quality of study population.

Keywords- Sleep quality, Medical interns, Pittsburgh Sleep Quality Index (PSQI).

I. INTRODUCTION

Sleep is an important physiological process of life. Sleep quality is directly related with mental, psychological, physical and emotional wellbeing[1].It has already been previously studied that one-third of adult population suffers from difficulty in sleep[2]. As the aging progress, especially from childhood to adulthood a gradual decline in sleep time has been observed[3]. In humans, after 24 hours of continuous wakefulness, the metabolic activity of the brain decreases significantly. It also helps in the growth and development by releasing of growth hormone and increased breakdown and production of proteins[4].

In recent years, a significant attention has been drawn towards sleep quality and sleep related problems. This is mainly of the fact that sleepiness and fatigue have become an endemic in the current population[5]. In some recent studies, it is found that unrestricted hours of services adversely affect the performances of medical interns. Various studied in the past decade have shown the bad effect of sleep deprivation on medical students [6,7]. One study showed reduction in error by 35.9% by interns after introducing an intervention with elimination of extended work shifts and reduction in the numbers of hours worked per week[8]. Thus, sleep quality can affect the psychomotor and cognitive performance of interns.

There are several studies of young population that demonstrates that engaging in regular physical activities or exercises for few months also improve their sleep quality [9,10] .Moreover, electronic device such as television, mobiles, and laptops have become an important part of the lives and is much affecting the sleep quality[11]. Poor sleep quality has also been reported to be related with gender, sleep duration, regular exercises, smoking, coffee and alcohol consuming habits [12,13].

II. MATERIALS AND METHODS

Study design:

This was an observational, cross-sectional, self-administered questionnaire based study among 100 medical interns of a government medical college of Western Maharashtra, India.

Study population:

There were two exclusion criteria for the study, first were those students who were suffering from any severe or chronic diseases, and have been advised by the physician to refrain from doing heavy and continuous duties. Second were those who were posted in duties which were not directly involved with patient care and management.

The objectives of the study were well explained to the interns and their written consent were taken before the commencement of the study. They were contacted during their recess time or off days from their shifts. The study protocol was approved by the institutional ethical committee of the medical college.

Measurement:

We made a self-administered questionnaire that included details like their age, gender, smoking habit, coffee intake and alcohol intake, duration of electronic devices use like mobiles or laptops and Pittsburgh sleep quality index (PSQI) for measuring sleep quality.

Pittsburgh Sleep Quality Index:

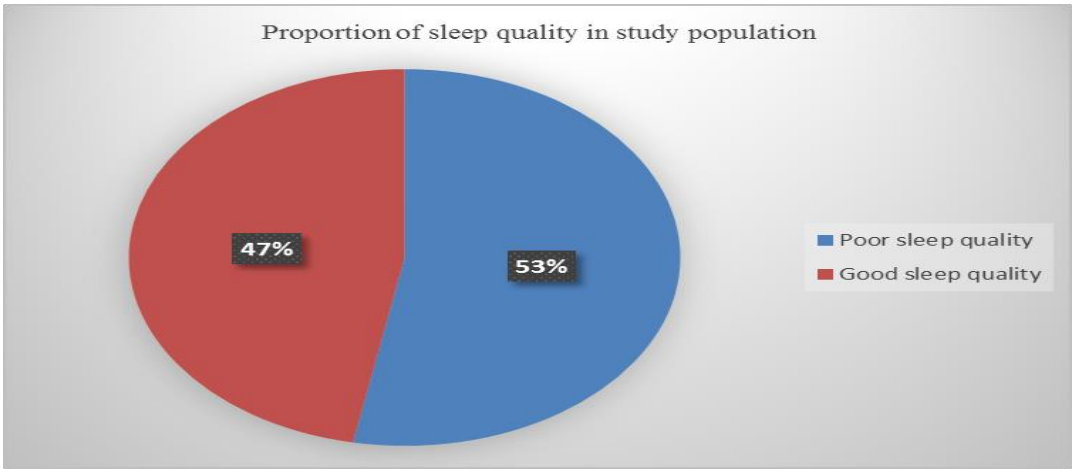
It is a self-rated 19 item questionnaire designed scale to measure sleep quality of at least one month of interval. It measures the sleep quality as 'good' or 'poor' by measuring seven components present in it. They are: (1) subjective quality of sleep, (2) latency of sleep, (3) duration of sleep, (4) efficiency of habitual sleep, (5) disturbances in sleep, (6) medications use for sleep, and (7) dysfunction during daytime in the last month. This 19 primary items scale calculates the scores ranging from 0 to 21. Scores with less than or 5 considered to be of good sleep quality, whereas score more than 5 considered to be of poor sleep quality. Through various studies it is clear that, the above scale has high internal consistency Cronbach's a = 0.83 and high test re-test reliability of 0.85 (P<0.001) [14].

Statistical Analysis:

Data was entered in MS-Excel 2016 version and statistical analysis was done in same by using chi-square test to study the relation with various study factors. Descriptive statistics are expressed in frequencies and percentages. Statistical significance was set as P value < 0.05.

III. RESULTS

A total of 100 medical interns were recruited in the study and were ultimately categorized into two groups. Figure 1 shows the proportion of the good (47%) and poor sleep quality (53%) in study population.



It was observed from Table 1, that more female interns were good sleepers (56.90%). Whereas, the group of poor sleepers were dominated by male interns (66.67%). A P-value of 0.0197 had been calculated. Secondly, majority of those interns who slept alone in a room were having good sleep quality (70.15%). On the other hand, those who shared their room were found to have poor sleep quality (54.55%). The P value came out to be 0.0167. With regard to the sleep duration, majority of the ones having sleep duration of less than 5 hours were found to be poor sleepers (77.77%). Whereas, those having sleep duration of 7 to8 hours (65.79%) or more than 8 hours (71.43%) were found to be good sleepers with P value came out to be 0.0275.

Coffee intake was another factor that was studied, in which majority of the interns having the habit of regular coffee intake were poor sleepers (62.26%) with P value of 0.0291. Many of the Medical students having regular alcohol intake were poor sleepers (97.05%), but with P value of 0.0698. Those having habit of regular smoking, majority of them were poor sleepers (92%) with P value of 0.0426.

Majority of interns doing regular exercises were good sleepers (58.83%), while those not doing regular exercise majority of them were poor sleepers (93.93) with P value of 4.85E-09 (i.e. P<<<0.01). The last factor that was taken in the study was the duration of electronic device usage like mobiles or laptops, in which majority of those using it for less than an hour were good sleepers (71.43%). On the other hand, majority of those using them for 1-3 hours (84.78%), 4-6 hours (66.18%) and for more than 6 hours (88%) were having poor sleep quality with P value of 0.0030.

Table 1: Distribution of study factors according to sleep quality

Study factors		Sleep quality (PSQI)		TOTAL (n)	*P- value
		Poor sleep n (%)	Good sleep n (%)		
Gender	female	25 (43.10)	33 (56.90)	58	0.0197975
	male	28 (66.67)	14 (33.33)	42	
Sleeping arrangement	Sleep Alone	20 (29.85)	47 (70.15)	67	0.0167444
	Share Room	18 (54.55)	15 (45.45)	33	
Sleep duration	<5 hrs	7 (77.77)	02 (22.23)	9	0.0275008
	05 to 06 hrs	6 (54.54)	05 (45.45)	11	
	07 to 08 hrs	13(34.21)	25 (65.79)	38	
	>8 hrs	12 (28.57)	30 (71.43)	42	
Coffee Intake	Yes	33 (62.26)	20 (37.74)	53	0.0291336
	No	19 (40.43)	28 (59.57)	47	
Alcohol Intake	Yes	33 (97.05)	01 (02.95)	34	0.0698152
	No	63 (95.45)	03 (04.55)	66	
Smoking	Yes	23 (92.00)	02 (08.00)	25	0.0426777
	No	72 (96.00)	03 (04.00)	75	
Regular Exercise	Yes	14 (41.17)	20 (58.83)	34	4.85E-09
	No	62 (93.93)	04 (06.07)	66	
Electronic devices (Mobiles / Laptops)	<1 hr	02 (28.57)	05 (71.43)	07	0.0030555
	1-3 hrs	39 (84.78)	07 (15.22)	46	
	4-6 hrs	15 (66.18)	07 (31.82)	22	
	>6 hrs	22 (88.00)	03 (12.00)	25	

*P-value was calculated using X^2 test. PSQI: Pittsburgh sleep quality index

From table 2, we can clearly observe that with regard to the sleeping arrangement, majority of the female interns slept alone (47.77%) while most of the male interns shared the rooms (69.70%). Also, for sleep duration many of the male students slept for less than 5 hours (66.66%). Majority of the female interns slept for7-8hours (57.89%). While, majority of male interns were having the habit of coffee intake (57.40%), alcohol intake (70.58%) and smoking (64%), female interns were found to be using electronic devices for lesser duration. For less than an hour many of them were females (85.72%) , for 1-3 hours both were found to be in equal proportions, for 4-6 hours majority of them were females (54.55%) but for more than 6 hours again male interns dominated (88%).

Table 2: Gender-wise distribution of factors affecting sleep quality of study population

Factors affecting sleep quality	Gender		Total (n)
	Male n (%)	Female n (%)	
Sleeping Arrangement			
Sleep Alone	35 (52.23)	32 (47.77)	67
Share Room	23 (69.70)	10 (30.30)	33
Sleep duration			
<05 hrs	06 (66.66)	03 (33.34)	09
05 to 06 hrs	07 (63.63)	04 (36.37)	11
07 to 08 hrs	16 (42.11)	22 (57.89)	38
>8 hrs	30 (71.42)	12 (28.57)	42
Coffee Intake			
Yes	31 (57.40)	23 (42.60)	54
No	27 (58.69)	19 (41.31)	46
Alcohol Intake			
Yes	24 (70.58)	10 (29.42)	34
No	34 (51.51)	32 (14.49)	66
Smoking			
Yes	16 (64.00)	09 (36.00)	25
No	42 (56.00)	33 (44.00)	75
Regular exercises			
Yes	24 (70.58)	10 (29.42)	34
No	34 (51.51)	32 (48.49)	66
Electronic devices (Mobiles, laptops)			
<1 hr	01 (14.28)	06 (85.72)	07
1-3 hrs	18 (50.00)	28 (50.00)	36
3-5 hrs	10 (45.45)	12 (54.55)	22
>5 hrs	15 (60.00)	10 (40.00)	25

*Parenthesis indicates group-wise percentages.

IV. DISCUSSIONS

The present study was carried out with the objective to observe sleep quality among the study population. It also aimed to determine factors associated with poor sleep quality. Here, the prevalence of poor sleep quality is 47%. In a similar study of medical students, its prevalence was found to be 30%[15]. Whereas, in another study it showed the prevalence of poor sleep quality to be 70% [16].

In this study, female interns are good sleepers i.e. 56.90%. The P value (0.0197) too shows the statistical significance existing in the study population for the gender. The other study in India also showed that females had better sleep quality than males [17.] However, in many previous studies, females were more poor sleepers compared to males [18,19,20].

The importance of sleeping arrangement is also demonstrated in the present study, the majority of interns sleeping alone were good sleeper as compare to study population who shared their rooms with significant P value (0.0167). Thus, showing an existence of statistical significance with regard to this factor in study population. One study also depicts that 90% of students share their rooms in their institutes and 41% wake up at night due to noises. Also their bed time and raise time differs among each other that directly affects their sleep quality [21].

The present study, depicts that increased sleep duration is related with improved sleep quality. The majority of interns with sleep duration 7-8 hours or more were found to be good sleepers along with P-value (0.0275) which shows statistical difference in sleep duration for sleep quality. However, many studies showed no statistical difference among sleep duration and sleep quality. One article clearly explains that sleep quality are important for psychological outcomes and sleep duration has important role for physical disorders. Therefore there is a limited exploration on how both of them are interacted or related affecting the health[22].

Majority of students with regular coffee intake (P value 0.029) and smoking (P value 0.0426) were having poor sleeping quality in the study with significant statistical differences. However, in regard with regular alcohol intake (P value 0.068), this did not show statistical difference between alcohol consuming and not consuming interns for sleep quality. Some similar studies also showed that excessive and regular coffee intake, smoking and alcohol were the factors that adversely affected their sleep quality [17, 23].

This study also showed regular exercise as a benefitting factor on sleep quality of study population. The P value (4.85E-09 i.e <<<0.01) that demonstrated a highly significant existing statistical difference among regular exercise and sleep quality. There are many studies that has been carried out that confirms exercise has positive effects on sleep quality [24,25,26].

In the present study, duration of the use of electronic devices (such as mobiles and laptops) had large impact on the sleep quality of medical interns. Maximum students got adversely affected with their sleep quality with increased duration of its usage. The major reason associated with this is the internet usage for social networking, playing games or watching videos at bedtime [27]. Many previous study showed that longer duration of mobiles and laptops impairs sleep quality among study population [28,29].

V.LIMITATIONS

Responses were factually recorded and we can't kept aside the general tendency of interns to give socially desirable answers and thus there is chances of under reporting of the actual problem. Moreover, this was a cross sectional study based only on the previous few weeks which might not be the exact representation of the study population. Lastly, comparison between different studies was not easy and reliable as there is variability in different measures and operational definitions for evaluating sleep quality.

VI.CONCLUSION AND RECOMMENDATION

The present study showed significant difference in gender, sleeping arrangements, sleep duration, coffee intake, smoking habit, regular exercises and use of electronic devices. Therefore, all these study factors had an impact on sleep quality among medical interns.

By this following study, we concluded that despite numerous research in this subject medical interns and professionals tend to ignore this important aspect. Therefore, sleep medicine can play an important role in diagnosing and managing this problem among them.

Moreover, we recommend to establish counselling centres in the institute itself in promoting and providing general sleep education among them. Proper scheduling of the workload and working schedule can also help to some extent. Last, but not the least those suffering from poor sleep quality must take advice of sleep specialists by appointing them in medical colleges regularly[30].

VII. FINANCIAL SUPPORT AND SPONSORSHIP

Nil

VIII. CONFLICTS OF INTEREST

There are no conflicts of interest.

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