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Research Article

SLEEP PATTERN IN MEDICAL POST GRADUATE STUDENTS AND ITS ASSOCIATION WITH STRESS-A CROSS SECTIONAL STUDY

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ABSTRACT

Medical post graduate students tend to disrupt their sleep because of demanding clinical and academic duties. Evidence from both cross-sectional and longitudinal studies document that there is an association of altered sleep pattern and symptoms of depression, stress and anxiety among young medical students. However, it is reasonable to argue that medical students are subjected to high level of stress and work hard to increase and maintain their average grade point at the expense of sleep. A cross sectional, questionnaire based study comprising of 104 post graduate medical students was carried out. The questionnaire was distributed to assess sleep quality using 'Pittsburg Sleep Quality Index (PSQI) and stress level by using Perceived Stress Scale (PSS)'. It was found out that the prevalence of poor sleep quality was very high amongst the medical post-graduates i.e. 85.58%. Most of the post-graduates were suffering from moderate stress (78.85%), 15.38% had severe stress and only 5.77% had low stress. The study shows that there is clear association of sleep pattern alteration with the levels of stress in medical post graduate students and the association was statistically significant $p = 0.0016$. Most of the medical post-graduate students suffers from altered sleep pattern and it was statistically associated with stress.

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INTRODUCTION

A good night's sleep is defined as when you fall asleep quite easily, do not fully wake up during the night, do not wake up too early, and feel refreshed in the morning (What is normal sleep.2018). Any disruption from normal sleep pattern can affect the general health. Many studies conducted in the United States, Australia, India and other countries have found that students with a poor sleep pattern tend to have poor scores in examinations and faced more depression than their colleagues (Abdullah *et al.*2017). Investigators have reported high prevalence estimates (>40%) of short sleep duration (<7 hrs) and poor sleep quality as measured by Pittsburg Sleep Quality Index (PSQI) among university students (Lemma *et al.*2012). Medicine is one of the most stressful fields of education because of its highly demanding professional and academic commitments resulting in sleep deprivation (Waqas *et al.*2015). Evidence from both cross-sectional and longitudinal studies document that there is an association of altered sleep pattern and symptoms of depression, stress and anxiety among young medical students (Lemma *et al.*2012).

The various stressors in one's life lead to unusual emotions and behaviors like altered sleep pattern and mental distress. Various

pressures like performance in academic tests, interpersonal relations, relationship problems, life changes, career explorations can lead to stress (Mazumdar *et al.*2012). Stress harms professional effectiveness, individual in stressful situation is influenced by his/her mental ability to carry out on going tasks (Atalla A and Altuwairqi YA 2017). High proportions of stress have been reported among medical students in different countries, for example – in Pakistan (60%), Thailand (61%), Malaysia (42%), and the United States (57%) (Abdullah *et al.*2017). It is a known fact that high level of stress has negative effects on physical as well as mental health of medical students. The most intense period is the week in which medical post graduate students are being interviewed and assessed for the program. Many of them consider this as a critical period in their career that would determine their ability to pursue their most desirable career track (Sadeh *et al.*2004). As a result to cope up with their work load medical- post graduate students tend to alter the sleep pattern (Abdullah *et al.*2017). Previous Studies have reported that a significant percentage of medical students suffer anxiety disorders because stress has a strong relationship with sleep quality and academic performances (Lohitashwa *et al.*2015). Studies have addressed the need to prevent future potential stress and burnout through

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the teaching of better coping skills to student(Vibe *et al.*2013). Psychological stress triggers the alteration in sleep pattern and is directly associated with poor sleep quality(Waqas *et al.*2015).Thus, it represents a vicious cycle that is associated with adverse mental health consequences in medical students. However, it is reasonable to argue that medical students are subjected to high level of stress and work hard to increase and maintain their average grade point at the expense of sleep(Alsaggaf *et al.*2016). Therefore this study aims to investigate the sleep pattern in medical post graduate students and its association with stress.

MATERIALS AND METHODS

Study Design, Population, area

A cross-sectional, questionnaire based survey approved by institutional ethics committee was conducted in all medical post graduate students of tertiary care teaching hospital.

Sample size

All male and female medical post graduate students of 1st,2nd,3rd year who consented for the study and fitted in the inclusion criteria were included. The total post graduate students enrolled were 150.Out of which 104 filled the complete questionnaire and consented for the study.

Sampling Method

The sampling method used for the study is Universal Sampling.

Inclusion Criteria

1. All medical post graduate students who gave the consent for the study.
2. Those that filled the complete questionnaire.

Exclusion Criteria

Students suffering from any chronic medical or psychological psychiatric diseases were excluded from the study.

Statistical Analysis

The data was entered and analyzed with the help of MS Excel and Epi-Info software version 7.2.2.2. p value of less than 0.05 was considered significant.

Procedure

The self-administered questionnaire approved by institutional ethics committee was distributed, after taking the informed consent from the medical post graduate students of tertiary care teaching hospital. They were informed about the study and were asked to fill the questionnaire in their leisure time. After filling, the questionnaire was collected and analyzed for the results and conclusion.

Sleep quality was assessed using the previously validated Pittsburg Sleep Quality Index (PSQI). The PSQI consists of 24 questions which generate seven component scores each ranging from 0 to 3(0 score equals better and 3 is worst) and one global sleep quality score. The global score >5 designates poor sleep quality while score ≤ 5 is considered good quality sleep. The questionnaire has been validated in different population including university students. (Buysse *et al.*1989)

The Perceived Stress Scale (PSS) was also used to measure the perception of stress. The PSS is a 10-item instrument that

include questions about ones feelings and thoughts in the last one month (how often one felt in a certain way) with a 5 point Likert scale (0= never and 4= very often). The score ranges from 0 to 40 and the higher score represented higher level of perceived stress. The psychometric property of this instrument was also studied in other studies.(Cohen *et al.*1994)

Apart from these two scales, 2 questions were also included in the presented questionnaire which asks the reason of stress and the stress relieving activity performed by medical post graduate students to relieve their stress.

RESULTS

Table 1 Distribution of Medical Post-graduates according to Stress, Sleep Pattern and Demographic factors

Parameter	Medical post-graduates	Percentage
GENDER-		
Male	68	65.38
Female	36	34.62
Total	104	100.00
YEAR OF STUDY-		
JR1	44	42.31
JR2	30	28.85
JR3	30	28.85
Total	104	100.00
SLEEP PATTERN-		
<5	15	14.42
>5	89	85.58
Total	104	100.00
STRESS-		
High stress	16	15.38
Low stress	6	5.77
Moderate stress	82	78.85
Total	104	100.00
REASON FOR STRESS-		
Academic	54	51.92
Workload	55	52.88
Economic	17	16.34
Personal	41	39.42
Family issues	22	21.15
Others	10	9.61
STRESS RELIEVING ACTIVITY-		
Sleep	49	47.11
Shopping	19	18.26
Music/Movies	55	52.88
Smoking/Addiction	16	15.38
Excess eating	18	17.30
Others	17	16.34

A cross sectional, questionnaire-based study was carried out among post graduate medical students with the help of a questionnaire based on 21 parameters. The total number of participants in the study were 104 out of which 68 (65.38%) were Male and 36 Female (34.62%).It was found that on the basis of Year of study the distribution was 44 (42.31%) in JR 1st Year, in JR 2ND year and JR 3rd year it was 30 (28.85%) respectively.

The instrument used for the analysis of sleep pattern was Pittsburg Sleep Quality Index (PSQI). Mean PSQI score was 8.51 ± 3.56 for 104 total participants. According to these scorers 89 (85.58%) out of 104 respondents were poor sleepers and 15 (14.42%) have good sleep quality. The study exhibited that females which had poor sleep quality were 32 (88.89%), however in males 57 (83.82%) showed a poor sleep quality. Among the respondents it was seen that 4 (11.11%) females

and 11 (16.18%) males did not show any sleep alteration. It is seen that there is no correlation between the gender and alteration of sleep pattern. P value for Gender- sleep pattern was 0.68 and it was not statistically significant.

Table 2 Association of stress and demographic factors with sleep pattern in medical post-graduates

Parameter	<5(%)	>5(%)	Total(%)	Chi-square	P value
GENDER-					
Female	4(11.11)	32(88.89)	36(34.62)	0.1650	0.68
Male	11(16.18)	57(83.82)	68(65.38)		
Total	15(14.42)	89(85.58)	104(100.00)		
YEAR OF STUDY-					
JR1	6(13.64)	38(86.36)	44(42.31)	0.1733	0.917
JR2	4(13.33)	26(86.67)	30(28.85)		
JR3	5(16.67)	25(83.33)	30(28.85)		
Total	15(14.42)	89(85.58)	104(100.00)		
STRESS-					
High stress	11(11.22)	87(88.78)	98(94.23)	9.94	0.0016
Low stress	4(66.67)	2(33.33)	6(5.77)		
Total	15(14.42)	89(85.58)	104(100.00)		

On the basis of year of study, it was observed that JR1 having poor sleep pattern were 38 (86.36%) and those with good sleep pattern were 6 (13.64%), while JR2 having poor sleep pattern were 26 (86.67%) and good sleep pattern were 4 (13.33%) and in case of JR3, the participants with poor sleep pattern were 25 (83.33%) and those with good sleep pattern were 5 (16.67%). The present study did not exhibit any statistically significant association between sleep pattern and the year of study.

Levels of stress were calculated using Perceived Stress Scale (PSS). Mean PSS score was 20.99 ± 4.98. Respondents having high stress were 16 (15.38%), moderate stress 82 (78.85%) and low stress 6 (5.77%), The factors associated with the stress and those that relieved stress are shown in the tables.

The present study revealed that there is association between alteration in sleep pattern and levels of stress. When medical post-graduates with low level of stress were compared with medical post-graduates with high and moderate level of stress, it was seen that the later had higher percentage of altered sleep pattern and it was statistically highly significant (p = 0.0016 OR=14.72 C.I. =2.4-90.03) The study exhibits that as the level of stress increases, an alteration in sleep pattern of medical post graduate students can be observed. The odds of having altered sleep pattern in medical post-graduates with moderate and high level of stress is 14.72.

DISCUSSION

The increased risk of sleep deprivation is always associated with the mental and physical morbidity. The present study demonstrates a clear association between the alteration in sleep pattern and levels of stress (Lohitashwa *et al.*2015).The overall prevalence of poor sleep quality in the study(88.58%) is similar to that shown in various other studies such as study carried out in Pakistan(77%),(Waqas *et al.*2015)Saudi Arabia study (76%)(Abdullah *et al.*217)and Ethiopia study (55.8%) (Lemma *et al.*2012).

The prevalence of stress analyzed through PSS demonstrates moderate stress(78.85%), high stress(15.38%) and low stress (5.77%) which is comparable to the study conducted in Taif University Saudi Arabia showing moderate stress(82%), severe

stress(12.67%) and mild stress (5.33%)(Atalla A and Altuwairqi YA 2017).

Our results revealed that the prevalence of poor sleep quality among stressed students is 88.78% whereas 33.33% of low-stressed students were poor sleepers. This is similar to the findings conducted in medical school in Pakistan and Saudi Arabia where a strong association between poor sleep and stress was found(Abdullah *et al.*2017,Waqas *et al.*2015).

However study conducted in Israel shows that coping style is a key factor in assessing the relationship between stress and sleep (Sadeh *et al.*2004). It is well documented that poor sleep quality is associated with lack of concentration, impaired memory function and lower academic performance, sleep deprived students are usually unaware that sleep loss can negatively influence examination preparation and performance and impair their ability to compete cognitive tasks (Bahammam *et al.*2012).Therefore, proper measures should be introduced to make students reduce their stress level and improve their sleep quality.

In this study no significant association was found between gender and sleep quality. This result is consistent with two previous studies in Pakistan and Saudi Arabia(Bahammam *et al.*2012,Waqas *et al.*2015).In contrast, few studies did report that being a female medical student was a significant predictor of a high stress level and sleep disorder(Abdulghani *et al.*2011)(Shah *et al.*2010).

Additionally no significant association was found between sleep quality and year of study. Another interesting finding in our study was that around 53% of medical post-graduates reported poor sleep quality because of work load and academic obligations.

Medical post-graduates perform various activities to relieve their stress such as shopping, listening to music/watching movies, sleeping, smoking/addiction, excess eating etc. In this study majority of them prefer listening to music/watching movies as their stress relieving activity. A randomized control trial concluded mindfulness-based stress reduction programs resulted in mental well-being and improved quality of life in medical and psychology students.

Sample size consisted only of a representative sample of a single medical school. Therefore, these results are not generalized to whole student population in Indian medical colleges. This is the important limitation of the study. Prospective studies are necessary to study the association between sleep pattern and stress in medical post graduate students.

CONCLUSION

The present study significantly associates alteration in sleep pattern with levels of stress. This could be because of inadequate sleep hygiene behaviors in medical post graduates. The association of sleep pattern with gender and year of study was not statistically significant. Therefore there is an urgent need to educated medical post graduate students about poor sleep hygiene and negative consequences of poor sleep quality. Proper counseling and change in the lifestyle may prove beneficial in improving their sleep pattern. There should also

be change in the curriculum of the medical post graduates in order to manage their stress level.

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