Original Research Article

Insomnia among medical students: a cross-sectional study

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ABSTRACT

Background: Insomnia, the most common sleep disorder, is the perception or complaint of inadequate or poor-quality sleep because of one or more of the following conditions: difficulty in falling asleep, frequent waking up during the night with difficulty for returning to sleep, waking up too early in the morning, or unrefreshing sleep. It is the most common sleep related complaint reported in the primary care setting. Medical students are specially at risk of developing insomnia and its consequences. This study evaluates the prevalence and severity of insomnia in medical students in relation to certain socio-demographic factors like age, sex and class of education.
Methods: A questionnaire based study was done on 135 medical students of Nishtar Medical University, Multan chosen on basis of random sampling to test the prevalence of insomnia using Athens Insomnia Scale (AIS). Out of these students 75 were males and 60 were females. Students were interviewed to obtain information about age, sex and academic year of education.
Results: According to Athens insomniac scale scoring, 55 (40.74%) students were found insomniac while 80 (59.25%) were non-insomniac. Out of 55 insomniac students, 23 (41.81%) were males while 32 (58.18%) were females. Likewise, out of 80 non-insomniac students, 52 (65%) were males while 28 (35%) were females. The prevalence of insomnia in medical students was found to be increased with the increasing age. It was found that the females have more insomnia prevalence as well as more severe signs and symptoms of insomnia. Moreover, final year students tend to show more prevalence and severity of insomnia than their juniors.
Conclusions: According to this study, 2 out of every 5 students were insomniac. Demographic comparison showed that the prevalence and severity of insomnia was more in females and final year students. Also, it was increasing side by side with increasing age.

Keywords: Depression, Demographic, Insomnia, Neuro-cognitive

INTRODUCTION

Insomnia, the most common sleep disorder, is the perception or complaint of inadequate or poor-quality sleep because of one or more of the following conditions:[1,2]

- Difficulty in falling asleep.

- Frequent waking up during the night with difficulty for returning to sleep
- Waking up too early in the morning
- Un-refreshing sleep.

Sleep disturbance is a psychiatric disorder. It is related to one of our biological rhythms called the circadian timing system, which is influenced by factors such as physiological function, school and work schedules, and

various medical conditions of the body including genetic differences.[3,4] Most sleep experts agree that the adult sleep requirement is typically between 6 and 10hours of sleep per 24-hour period with the majority of individuals requiring approximately 8hours of sleep per day. The tolerated minimum sleep time is approximately 6hours.[5]

Medical students are one subgroup of the general population who appear to be 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.[6] The prevalence of sleep disorders in the general population has been estimated to be 15-35%, and in medical students it was evaluated at about 30%.[7,8] A systematic review of 7 studies by Jiang et al shows that the prevalence of insomnia among university students is ranging from 9.4% to 38.2%.[9]

A large body of evidence supports the notion that good quality sleep is important for optimal neuro-cognitive and psychomotor performance as well as physical and mental health.[10] Poor sleep quality highly correlated with poor academic performance and reduced learning ability to perform basic activities, such as solving a mathematical problem.[11,12] There is evidence that psychiatric disorders like depression and psychosocial stress can be caused by insomnia.[13] In fact, insomnia increases the risk for subsequent development of depression by a factor of four.[14] Insomnia can also be an early marker for depression, anxiety, and alcohol abuse.[15]

Research on sleep disturbances in undergraduate medical students is of particular interest because of the known relationship between sleep and mental health and the concern that the academic demands of medical training can cause significant stress.[16] This study aims to describe the prevalence of insomnia and to measure the variability of different insomnia symptoms among medical students.

METHODS

A descriptive, cross-sectional study was carried out from February to May,2018 at Nishtar Medical University, Multan. Ethical issues were addressed according to institutional review board. The class representatives were intimated before hand about the time and place of conducting the session so that all those willing to participate could be assembled in the lecture theatre. All the participants were informed about the targets of the research, the methods of the study, and how to fill the questionnaire. All procedures were performed only with the consent of the participants, and all information was used solely for this research. Those who did not give their consent to participate were excluded.

A questionnaire based study was done on 135 medical students chosen on basis of random sampling to test the prevalence of insomnia using Athens Insomnia Scale (AIS). Out of these students 75 were males and 60 were

females. Likewise, 14 students were from third year, 93 from fourth year and 28 were from final year of MBBS. A complete history was taken from the subjects in relation to their academic year, sleep hours, midday nap, and major causes of sleep disturbance mentioned in the literature: age, gender, habitat, BMI, physical activity, smoking, and marital status. A screening for chronic medical or psychiatric illnesses was performed during the interview. Students with known chronic medical illnesses or those who were taking drugs that cause sleepiness were excluded from the study.

Procedure and data analysis

Athens Insomnia Scale (AIS) is an 8-item questionnaire with each consisting of 4 parameters showing insomnia severity from none to very severe levels (0-3). The eight component scores are then added to yield a global AIS score in the range of 0 to 24; the higher the score is, the worse the sleep quality. According to this scale, students with score of 6 or greater than 6 were considered insomniac. All symptoms of insomnia were evaluated on basis of these parameters. The data collected was entered and analysed on SPSS v.20.

RESULTS

One hundred and fifty (150) students were selected for the study and were asked to return the completed 08 items questionnaire. One hundred and thirty five students returned the questionnaires, so the response rate was 90%. Out of 135 students, 75 (55.55%) were males and 60 (44.44%) were females. The overall mean age of respondents was 21.69±1.32 while mean age of males and females were 21.88±1.29 and 21.46±1.35 respectively. According to Athens Insomniac Scale scoring, 55 (40.74%) students were found insomniac while 80 (59.25%) were non-insomniac (Figure 1). Out of 55 insomniac students,23(41.81%) were males while 32(58.18%) were females. Likewise, out of 80 non-insomniac students, 52 (65%) were males while 28 (35%) were females (Figure 2).
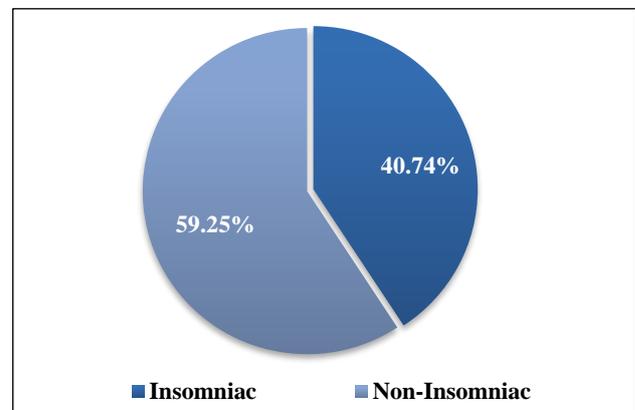
Figure 1: Total distribution of insomnia among students.
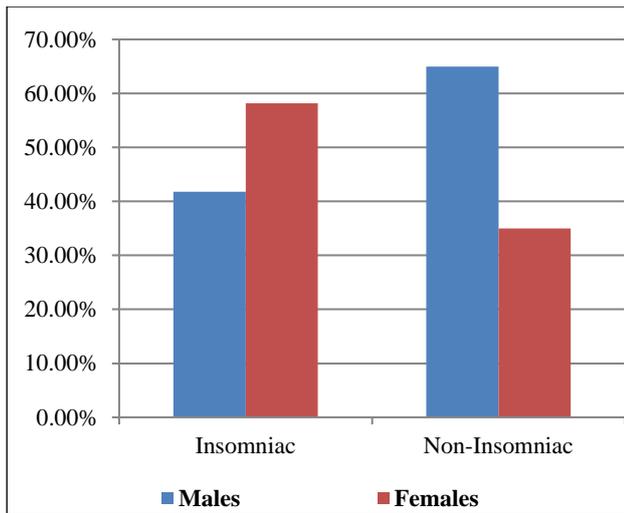
Figure 2: Gender-wise distribution of insomnia among students.

The prevalence of insomnia in medical students was found to be increased with the increasing age (Table 1).

Table 1: Prevalence of insomnia in different age groups.

Age (years)	Insomniac students	Non-insomniac students	Total	Percentage of insomniac students
18	02	05	07	28.57
19	03	01	04	75
20	05	07	12	41.66
21	17	29	46	36.95
22	16	22	38	42.10
23	04	10	14	28.57
24	05	04	09	55.55
25	02	01	03	66.66
26	01	01	02	50

Table 2: Gender-wise answers to Athens insomnia questionnaire (*Scores are according to Athens Insomnia Scale).

Questions	Scoring*	Males (%) N=75 (100%)	Females (%) N=60 (100%)
Sleep induction (time it takes you to fall asleep after turning-off the lights)	0	23(30.66%)	20(33.33%)
	1	39(52%)	27(45%)
	2	12(16%)	8(13.33%)
	3	01(1.33%)	5(8.33%)
Awakenings during the night	0	38(50.66%)	24(40%)
	1	27(36%)	24(40%)
	2	10(13.33%)	09(15%)
	3	02(2.66%)	03(5%)
Final awakening earlier than desired	0	45(60%)	27(45%)
	1	23(30.66%)	21(35%)
	2	05(6.66%)	08(13.33%)
	3	01(1.33%)	04(6.66%)
Total sleep duration	0	50(66.66%)	35(58.33%)
	1	17(22.66%)	14(23.33%)
	2	07(9.33%)	08(13.33%)
	3	01(1.33%)	03(5%)
Overall quality of sleep (no matter how long you slept)	0	51(68%)	33(55%)
	1	18(24%)	13(21.66%)
	2	04(5.33%)	07(11.66%)
	3	00	07(11.66%)
Sense of well-being during the day	0	23(30.66%)	33(55%)
	1	28(37.33%)	11(18.33%)
	2	07(9.33%)	08(13.33%)
	3	00	05(8.33%)
Functioning (physical and mental) during the day	0	44(58.66%)	28(46.66%)
	1	26(34.66%)	20(33.33%)
	2	03(4%)	05(8.33%)
	3	01(1.33%)	07(11.66%)
Sleepiness during the day	0	22(29.33%)	08(13.33%)
	1	40(53.33%)	23(38.33%)
	2	10(13.33%)	16(26.66%)
	3	02(2.66%)	13(21.66%)

Table 3: Class-wise answers to Athens insomnia questionnaire.

Questions	Scoring*	Class (Third Year) N=14(100%)	Class (Fourth Year) N=93(100%)	Class (Final Year) N=28(100%)
Sleep induction (time it takes you to fall asleep after turning-off the lights)	0	03(21.42%)	28(30.10%)	12(42.85%)
	1	10(71.42%)	44(47.31%)	12(42.85%)
	2	01(7.14%)	16(17.20%)	03(10.71%)
	3	00	05(5.37%)	01(3.57%)
Awakenings during the night	0	08(57.14%)	44(47.31%)	11(39.28%)
	1	04(28.57%)	37(39.78%)	10(35.71%)
	2	04(28.57%)	08(8.60%)	06(21.42%)
	3	00	04(4.30%)	01(3.57%)
Final awakening earlier than desired	0	09(64.28%)	51(54.83%)	13(46.42%)
	1	05(35.71%)	31(33.33%)	08(28.57%)
	2	00	09(9.67%)	04(14.28%)
	3	00	02(2.15%)	03(10.71%)
Total sleep duration	0	08(57.14%)	60(64.51%)	16(57.14%)
	1	04(28.57%)	22(23.65%)	05(17.85%)
	2	02(14.28%)	09(9.67%)	05(17.85%)
	3	00	02(2.15%)	02(7.14%)
Overall quality of sleep (no matter how long you slept)	0	11(78.57%)	61(65.59%)	13(46.42%)
	1	01(7.14%)	24(25.80%)	06(21.42%)
	2	02(14.28%)	05(5.37%)	04(14.28%)
	3	00	03(3.22%)	05(17.85%)
Sense of well-being during the day	0	11(78.57%)	51(54.83%)	10(35.71%)
	1	03(21.42%)	29(31.18%)	11(39.28%)
	2	00	09(9.67%)	06(21.42%)
	3	00	04(4.30%)	01(3.57%)
Functioning (physical and mental) during the day	0	10(71.42%)	51(54.83%)	13(46.42%)
	1	04(28.57%)	34(36.55%)	07(25%)
	2	00	04(4.30%)	04(14.28%)
	3	00	04(4.30%)	04(14.28%)
Sleepiness during the day	0	06(42.85%)	17(18.27%)	08(28.57%)
	1	08(57.14%)	50(53.76%)	05(17.85%)
	2	00	19(20.43%)	08(28.57%)
	3	00	08(8.60%)	07(25%)

*Scores are according to Athens Insomnia Scale

Gender-wise answers to each question of Athens insomnia questionnaire were recorded.

After comparing the highest score value in each question, it was found that the females have more insomnia prevalence as well as more severe sign and symptoms of insomnia (Table 2). The overall mean severity level was 9.78 in females while in males it was 1.33.

Class-wise answers to each question of Athens insomnia questionnaire were also recorded. After comparing the highest score value in each question, the final year students were found to have highest prevalence and severity of insomnia (Table 3).

DISCUSSION

The present study has assessed the medical students of Nishtar Medical University Multan and found that about 40.74% of the sample population was affected with insomnia. The prevalence of insomnia in this study was in congruence with contemporary cross-sectional studies. In Brazil, some researchers reported that the prevalence of insomnia among medical students was 28.15%.[17] Likewise, in Iran a research which was conducted on the same topic showed that 42% of the students were affected of insomnia.[17] The difference between the prevalence of insomnia among medical students from all over the world may be due to different curriculum, studying

methodology, working hours, lifestyle as well as extra-curricular activities.

The mean age of the students reported was 21.69±1.32 which coincide with those of the previous studies.[18-22] The prevalence of insomnia in medical students was found to be increased with the increasing age. Various factors could be responsible for this trend like promotion of study year, increase in the number of subjects, skills and clinical rotations. Although previous studies documented that the prevalence of insomnia among medical students increases with the age, however, a local study showed that among general population, demographic factors like age and gender were not found to be statistically significant.[23]

In our study, we found the prevalence and severity of insomnia in both sexes to be statistically significant (p<0.05). Female students were affected more from insomnia than male students. The scoring based on gender-wise answers to each question of Athens Insomnia Questionnaire showed that disturbance in various sleep characteristics like sleep induction, awakenings during the night, final awakening earlier, total sleep duration, overall quality of sleep and sleepiness during the day was found to be very severe among females as compared to males. According to a longitudinal twin study of insomnia symptoms in adults, genetic factors influence the insomnia symptoms having more severity in females than that in males.[24]

The scoring of class-wise answers to each questions of Athens Insomnia Questionnaire showed that the frequency and severity of insomnia increases side by side with promotion in higher classes. Fourth and final year students tend to be more affected by insomnia than their junior peers. This may be due to increase in number of different subjects and clinical postings etc. which increase the burden of work on students.[25] Many others studies also support these findings.[18-22] The study by Pagel and Kwiatkouski, Veldi et al and Medeioros et al concluded that insomnia significantly reduces the academic performance.[26,27,28] Failure to get enough sleep is a challenge for student and causes day time sleepiness, reduced memory and cognitive ability, decreased work efficiency, learning disability and academic failure.[27,29,30]

The results of this study would help the professionals dealing with insomnia to develop evidence based prevention and management guidelines for the students who are at risk or with insomnia. This study would be a baseline for researchers. It also provide statistical as well as clinical data to health planners and policy makers for the betterment of the society.

CONCLUSION

To conclude, 2 out of every 5 students were insomniac. Demographic comparison showed that the prevalence and severity of insomnia was more in females and final year students. Also, it was increasing along with increasing age. Lastly, we recommend further studies with larger sample size, diverse source population, variety of means of measuring academic performance, and different study design, to overcome majority of the limitations of this study.

ACKNOWLEDGEMENTS

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