SLEEP DISORDERS

ORIGINAL
PROF-1942

RAZAZIAN NAZANIN
Assistant Professor of Neurology
Kermanshah University of Medical Sciences
Kermanshah, Iran

REZAEI MANSOUR
Assistant Professor of Biostatistics
Kermanshah University of Medical Sciences
Kermanshah, Iran

ABSTRACT...Background: It has been estimated that 20% of adults and children have sleep disorder symptoms and signs. Sleep disorders remain largely undiagnosed in the general population. Increasing evidence suggests that sleep alterations could favor subsequent depression and behavioral disturbances. **Aim of the study:** Regarding high prevalence of sleep disorders in the general population and their effect on mental and physical functions, this study was aimed to assess the prevalence of sleep disorders among medical students in Kermanshah University of Medical Sciences. **Methods:** Assessment of sleep disorders was done by Global Sleep Assessment Questionnaire (GSAQ). In this descriptive study, frequency of insomnia, daytime sleepiness, non-idiopathic insomnia, obstructive sleep apnea, restless leg syndrome and paroxysmal leg movement, nightmares, sleep walking and a sense of depression or anxiety was calculated. **Results:** A total number of 393 medical students, 151 male and 242 female, were recruited. One or more kinds of sleep disorders have been reported by 254 persons (64%). The most frequent disorder was non-idiopathic insomnia (50.9%). Frequency of idiopathic insomnia was 29.5%. Prevalence of daytime sleepiness was 21.4%. The least frequent disorder was sleep walking (1.5%). Subjective sense of anxiety or depression was reported by 109 persons (27.7%). Only 39 (9.9%) of the respondents had no disorder. **Conclusion:** Our findings suggest that sleep disorders are frequent in our studied population of medical students. More education about sleep disorders, sleep hygiene, and management of a life style which necessarily includes shift work and long hours of study, may lead to improved sleep patterns in medical students.

Keywords: Insomnia, Daytime sleepiness, Sleep disorder, Medical students

BACKGROUND

There is not sufficient statistical data regarding the prevalence of sleep disorders in the Iranian population, and specifically Iranian medical students. This study focuses on assessing the frequency of sleep disorders among medical students in Kermanshah University of Medical Sciences. This is a first step in finding more precise information regarding sleep disorders in this population and the rate of various types of disorders. This study will also open a window for future research regarding this subject and possible remedial efforts.

Most people require approximately eight hours of sleep nightly[1]. However; there is significant variation among individuals in the amount of sleep they require. For example, some claim to only need four to six hours of sleep in a twenty-four hour period[2].

Studies have demonstrated that 20% of people show signs of various kinds of sleep disorders, which remain generally undiagnosed[3,4]. Moreover, nocturnal sleep periods decreased by as little as 1.3 to 1.5 hours may reduce daytime alertness by as much as 32%[1]. These disorders may lead to depression and behavioral disturbances[5,6,7]. Interestingly, Kripke et al. have reported an increased risk of death among individuals who sleep fewer than four or more than ten hours[2]. Assessment of difficulties with sleep among medical students is of special importance, since they lead a uniquely stressful life. This may include not only long hours of study, shift working (which may at times exceed twenty-four hours of awakeness), but also extreme emotional stress in dealing with critical patients. As an example, in one particular study, 36.2% of university students had different types of sleep disorders[8], which illustrates the magnitude of this problem and justifies the study of this particular population group.

METHODS

Definition of sleep disorders was based on the International Classification of Sleep Disorders (ICSD)[9]. In this cross-sectional study, assessment of sleep disorders was done by Global Sleep Assessment Questionnaire (GSAQ), which consists of eleven multiple choice questions. The sensitivities and specificities of this Questionnaire for insomnia, obstructive sleep apnea, paroxysmal leg movement, and parasomnia, respectively are 79/57, 93/58, 93/52, and 100/49. Test-retest reliability ranges from 0.51 to 0.92[4].

The questionnaire was given to all 450 medical students at Kermanshah University of Medical Sciences in 2005. In order to reduce the effects of adjusting problems on sleep patterns in new medical students, we did not recruit students in their first months of the semester. In order to reduce the effects of sleep deprivation during exams, the first-year and second-year students who had final exams surveyed six weeks before the end of the term.

The questionnaire was introduced to the students in medical school and educational hospitals. The aim of the study was explained to them. For the purpose of ethical issues, the questionnaire did not contain the participants' names, and there was no obligation to respond to it. The participants were reassured that the data would only be used for the purpose of this survey. The questionnaire was self-rating. Among the students, 393 out of 451 persons filled out the questionnaires, therefore the response rate was about 87%. It was explained in the questionnaire, that the criterion for the presence of symptoms was their presence during the recent four weeks.

Frequency of insomnia, daytime sleepiness, non-idiopathic insomnia, obstructive sleep apnea, restless leg syndrome, paroxysmal leg movement, nightmares, sleep walking, and a sense of depression or anxiety was calculated. For data analysis "Independent sample t test" and "chi square test" were performed to compare the differences between the two genders.

RESULTS

A total number of 393 medical students, including 151 males and 242 females, were recruited. The mean age of participants was 23.15 ± 2.35 years. One or more types of sleep disorders were reported by 254 (64%) persons. Only 39 (9.9%) of respondents reported no disorders. Idiopathic insomnia was reported by 116 persons (29.5%); 200 individuals had non-idiopathic insomnia (50.9%), and 84 persons had daytime sleepiness (21.4%). Subjective sense of anxiety or depression was reported by 109 persons (27.7%). Other findings are shown in table-I.

DISCUSSION

In our study of Kermanshah university students, insomnia was the most common disorder. Other studies

Table-I. Comparison of prevalence of sleep disorders in the to genders.

Disorder	Female		Male		Total		P-value
	n	(%)	n	(%)	n	(%)	
Idiopathic insomnia	59	(24.38)	57	(37.74)	116	(29.51)	0.0248
Daytime sleepiness	33	(13.63)	51	(33.77)	84	(21.4)	0.0278
Non idiopathic insomnia	112	(46.28)	88	(58.27)	200	(50.89)	0.093
Decrements in daytime task performance	55	(2272)	49	(32.45)	104	26.46)	0.2628
Sleep apnea	13	(5.37)	23	(15.23)	36	(9.16)	0.3222
Restless leg syndrome	14	(5.78)	11	(7.28)	25	(6.36)	0.8808
Paroxysmal leg movement	16	(6.61)	15	(9.93)	31	(7.88)	0.5324
Nightmares	17	(7.02)	18	(11.92)	35	(8.9)	0.61
Sleep walking	4	(1.65)	2	(1.32)	6	(1.52)	0.976
Sense of anxiety or depression	65	(26.85)	44	(29.13)	109	(27.73)	0.7948
Without any disorders	30	(12.39)	9	(5.96)	39	(9.92)	0.5686
Total	242	(6157)	151	(38.42)	393	(100)	-----

have also pointed to insomnia as the most frequent sleep disorder[10-12]. In our study, non-idiopathic insomnia was more prevalent than idiopathic insomnia (50.89% compared to 29.51%). The cause of 60% of non-idopathic insomnia seemed to be related to day time tasks. In other studies day time tasks also seemed to play an important role in insomnia. For example, in a study in the United States, students expressed significant restrictions in their sleep time. While, the average time of sleep was 7.02 hours, only 29.4% of the students had 8 or more hours of sleep, and %25 of them had less than 6.5 hours of sleep. Interestingly, this study also showed a difference in sleeping habits of men and women, where men slept later and rose earlier[13]. Additionally, an evaluation of female college students in another study revealed that almost half of them had sleep deprivation during weekdays, and sleep debts was significantly associated with depression[14].

Additionally, 29.51% of individuals in our study seemed to show signs of idiopathic insomnia, which is similar to proportions found in a couple of other studies[15,16]. While we found a higher frequency of idiopathic insomnia in men, in a study of first-year university students in Spain, both sexes seemed to equally suffer from insomnia[7], and some other studies have found a higher frequency of idopathic insomnia in women[10,17].

Moreover, prevalence of sleep apnea in our study was 9.2%. In another similar study among medical students, not only the rate of reported sleep apnea cases was 11.9%, but also, even after controlling for age, sex and BMI, snoring seemed to be connected to increased rates of failing exams in a dose-response manner[18].

Five to Fifteen percent of the general population suffers from mild symptoms of restless leg syndrome (RLS). RLS prevalence varies in different surveys, and it depends on the inclusion criteria regarding the severity of the disorders and the studied population[19,21]. It may appear as a symptom of diseases such as End-Stage Renal Disease, or as a side-effect of drugs such as tricyclic antidepressants or monoamine oxidase inhibitors. Moreover, RLS may be seen as an idiopathic disorder, especially in elderly individuals in whom 30% prevalence has been observed[22].The prevalence of RLS in our study was 6.4%, and the prevalence of Paroxysmal Leg Movement (PLM) which usually accompanies RLS was 7.9%. The low rate of RLS in our study may be related to the younger age of participants studied.

Prevalence of nightmares in our study was 8.9% which resembled the results of another study with a prevalence of 7.5 %[23]. Moreover, prevalence of sleepwalking was 1.5%, where the rates were significantly higher in women. Similarly, in a survey of sleep disorders among Kuwaiti adolescents, prevalence of sleep walking was 2%[24].

Prevalence of daytime sleepiness in our study was 21.4%, and it was more frequent in men but this difference was not significant. In a cross-sectional survey which was carried out among students within the higher education system in Paris in 1992, 10% had daytime sleepiness[25], and in another study, prevalence of daytime sleepiness was 6.8%[26]. In our study, the prevalence of daytime sleepiness was about 2 to 3 times more than the mentioned two studies. The higher prevalence of this disorder in our study may be due to the student's insufficient awareness about sleep hygiene, and/or shift work. Furthermore, in a survey in the United States, a quarter of the students had significant daytime sleepiness, where 75% of them claimed tiredness and sleepiness at least once a week, and 15% experienced falling asleep in class once a week or more[13]. Additionally, in our study, decrements in daytime task performance due to sleep disorder were reported by 26.46% of respondents. Even though this was more frequent in men, the difference was not significant.

Anxiety or depression was reported by 27.7% of our students. A study in Dubai Medical College showed 28.6% depression and 28.7% anxiety among medical students[27]. It must be noted that our study was not specifically designed for the evaluation of anxiety and depression, and these disorders were self-reported. Thus, for a more precise study, specific methods need to be designed and performed for this purpose.

Finally, 9.9% of our respondents reported no sleep

disorder, anxiety, or depression, and interestingly most of these individuals were women.

To summarize, sleep disorders can affect daytime task performance and prolong reaction time, which is of great importance for medical students. In our study we have attempted to investigate the variety and frequency of sleep disorders in Kermanshah University of Medical Sciences. The most frequent sleep disorder was non-idiopathic insomnia, and sleepwalking had the least frequency. The high prevalence of insomnia and especially non-idiopathic insomnia in our study may be due to different extrinsic and intrinsic factors. Some of these factors are mentioned in other studies including sharing housing with friends, and unsuitable conditions in these spaces such as excessive sound and light, playing computer games, stress about finishing tasks, and anxiety about exams and future plans[14].

Finally, prevalence rates in our study are based on self-reported data. Even though disorders such as RLS may accurately be diagnosed by questionnaires, some components such as exact duration of sleep are best assessed by objective methods such as polysomnography. Therefore, using questionnaires might be regarded as a possible limitation of this study. Nevertheless according to Regestin et al., subjective sleep reports do contain useful information[14].

The other limitation of our study was that there were no questions regarding drug abuse. Therefore, we are not able to discuss the correlation of drug abuse and its effects on sleep patterns in our findings. Additionally, we used a "sensitive" rather than a highly specific questionnaire. This factor might also be interpreted as a possible limitation.

Considering the high prevalence of sleep disorders among medical students, we believe that educational workshops regarding sleep hygiene, categories of sleep disorders, and the effects of these disorders on daily tasks, and suggestions for improving their life styles, may be helpful as a partial remedy to sleep problems. As for future endeavors, we suggest the performance and inclusion of even more detailed and objective methods in this population.

ACKNOWLEDGMENTS

The authors would like to thank Dr. M. Torkashvand and Dr. M. Mesri of the School of Medicine, Kermanshah University of Medical Sciences for their cooperation in data gathering and Dr .Partow Hooshmandrad for her valuable help in editing the manuscript. We would also like to thank colleagues who gave us useful advice in preparing the final manuscript.

REFERENCES

1. Kripke DF, Simons RN, Garfinkel L, **Hammond EC Bonnet MH, Arand DL. We are chronically sleep deprived**. Sleep 1995 Dec; 18(10): 908-11.

2. Kripke DF; Simons RN; Garfinkel L; Hammond EC. **Short and long sleep and sleeping pills. Is increased mortality associated?** Arch Gen Psychiatry 1979 Jan;36(1):103-16

3. Carney P R, Berry R ,Geyer J D .**Clinical sleep disorders. Philadelphia, PA**. Lippincott Williams & Wilkins,2005

4. Roth T, Zammit G, Kushida C, Doghramji K, Mathias SD, Wong JM, Buysse DJ. **A new questionnaire to detect sleep disorders.** Sleep Med. 2002 Mar; 3(2): 99-108

5. Estrella M J, Benitez P H, Rodriguez S F, Sandoval S G . **Evaluation of depressive symptoms and sleep alterations in college students.** Arch Med Res. 2005 Jul-Aug; 36(4): 393-8.

6. Chang PP, Ford DE, Mead LA, Cooper-Patrick L, Klag MJ. **Insomnia in young men and subsequent depression. The Johns Hopkins Precursors Study.** Am J Epidemiol. 1997 Jul 15; 146(2):105-14.

7. Mandosa JF, Vela-Bueno A, Vgontzas AN, Bernardio SO, Ramos-Platon MJ, Bixler EO, Crus-Troca JJN. **Nighttime sleep and daytime functioning correlates of the insomnia complaint in young adults.** Journal of Adolescence 2009; 32:1059-1074.

8. Ban DJ, Lee TJ. **Sleep duration, subjective sleep disturbances and associated factors among university students in Korea.** J Korean Med Sci. 2001 Aug; 16(4):475-80.

9. Diagnostic Classification Steering Committee, Thopy, MJ . **International classification of sleep disorders:**

Diagnostic and coding manual. American Sleep Disorders Association, Rochester, NM , 1990.

10. Ford DE, Kamerow DB. **Epidemiologic study of sleep disturbances and psychiatric disorders .An opportunity for prevention.** JAMA 1989 Sep 15; 262(11): 1479-84.

11. Bixler EO, Kales A, Soldatos CR, Kales JD,Healey S. **Prevalence of sleep disorders in the Los Angeles metropolitan area.** Am J Psychiatry 1979 Oct; 136(10):1257-62.

12. Mellinger GD, Balter MB, Uhlenhuth EH. **Insomnia and its treatment. Prevalence and correlates.** Arch Gen Psychiatry 1985 Mar; 42(3) :225-32

13. Lund HG, Reider BD, Whiting AB.Prichard JR. **Sleep ptterns and predictors of disturbed sleep in a large population of college students.** Journal of Adolescent Health.2010; 46: 124-132.

14. Regestin Q, Natarajan V, Pavlova M, Kawasaki S, Gleason R, Koff E. **Sleep debts and depression in female college students.** Psychiatry research 2010;176: 34-39.

15. Lee KA, McEnany G, Weekes DJ Adolesc Health. **Gender differences in sleep patterns for early adolescents.** J Adolesc Health. 1999 Jan; 24(1): 16-20.

16. Agaryun MY, Kara H, Ozer OA, **Nightmare and associated experiences.** Psychiatry clin neuros ci.2003 Apr .57(2): 139-45.

17. Bliwise DL .**Sleep in normal aging and dementia.** Sleep 1993 Jan; 16(1):40-81

18. Ficker JH, Wiest GH, Lehnert G, Meyer M, Hahn EG. **Are snoring medical students at risk of failing their exams?** Sleep. 1999 Mar 15; 22(2):205-9.

19. Lavigne GJ, Montplaisir JY. **Restless legs syndrome and sleep bruxism: prevalence and association among Canadians.** Sleep 1994 Dec; 17(8):739-43

20. Nichols DA, Allen RP, Grauke JH, Brown JB, Rice ML, Hyde PR,Dement WC ,Kushida CA. **Restless legs syndrome symptoms in primary care: a prevalence study.** Arch Intern Med 2003 Oct 27; 163(19):2323-9.

21. Hogl B, Kiechl S, Willeit J, Saletu M, Frauscher B, Seppi K, Muller J, Rungger G, Gasperi A, Wenning G, Poewe W. **Restless legs syndrome: a community-based study of prevalence, severity, and risk factors.** Neurology 2005 Jun 14;64(11):1920-4

22. Diagnostic Classification Steering Committee. **The International Classification of Sleep Disorders, Revised: Diagnostic and Coding Manual.** American Sleep Disorders Association, Rochester, MN, 1997.

23. Agaryun MY, Kara H, Ozer OA. **Nihtmares and dissociated experiences.** Psychiatry clin neuros ci.2003 Apr; 57(2):139-45

24. Abdel-Khalek AM. **Epidemiologic study of sleep disorders in Kuwitian adolescents.** Percept Mot Skills. 2001 Dec; 93(3):901-10.

25. Printemps C, Cohen S, Poisson MA, Gibert MH, McCann CC, Quera Salva MA. **Sleep and vigilance in students.** Sante Publique. 1999 Mar; 11(1):17-28.

26. Roberts RE, Shema SJ, Kaplan GA. **Prospective data on sleep complaints and associated risk factors in an older cohort.** Psychosom Med. 1999 Mar-Apr; 61(2):188-96.

27. Ahmed I, Banu H, Al-Fageer R, Al-Suwaidi. **Cognitive emotions: Depression and anxiety in medical students and staff.** Journal of Critical Care 2009;24: e1-e18.

Article received on: 12/03/2012 Accepted for Publication: 15/05/2012 Received after proof reading: 00/00/0000

Correspondence Address:
Razazian Nazanin
Assistant Professor of Neurology
in Kermanshah University of Medical Sciences
Kermanshah, Iran

Article Citation:
Nazanin R, Mansour R. Sleep disorders. Professional Med J Aug 2012;19(4):508-512.