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.

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 nightly1. 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 period6.

Studies have demonstrated that 20% of people show signs of various kinds of sleep disorders, which remain generally undiagnosed3,4. Moreover, nocturnal sleep periods decreased by as little as 1.3 to 1.5 hours may reduce daytime alertness by as much as 32%7. These disorders may lead to depression and behavioral disturbances5,6,7. Interestingly, Kripke et al. have reported an increased risk of death among individuals who sleep fewer than four or more than ten hours8. 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 disorders9, 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)8. 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 0.924.
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
have also pointed to insomnia as the most frequent sleep disorder. In our study, non-idiopathic insomnia was more prevalent than idiopathic insomnia (50.89% compared to 29.51%). The cause of 60% of non-idiopathic 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. 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.

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. 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, and some other studies have found a higher frequency of idiopathic insomnia in women.

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.

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. 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. 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%. 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%

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, and in another study, prevalence of daytime sleepiness was 6.8%. 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. 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. 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
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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.

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.

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.

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