

# Prevalence of daytime sleepiness among medical university students

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**Received:** 4 March 2018  
**Accepted:** 18 June 2018  
**ePublished:** 20 July 2018

**Keywords:** Sleep, Daytime sleepiness, Epworth sleepiness scale

## Abstract

**Introduction:** Medical university students are one group of students that are in high risk of sleep disorders.

**Objectives:** In present study, we examined daytime sleepiness among Qazvin University of Medical Sciences students.

**Patients and Methods:** This cross-sectional study was conducted in five faculties including medicine, nursing and midwifery, dentistry, para-medicine and health in Qazvin in 2017. Around 400 students from these five faculties were randomly selected by using sample size formula. For measuring students' daytime sleepiness, we used Epworth Sleepiness Scale (ESS). This questionnaire has eight questions and examines the chance of falling asleep in daily situations. The total score in this questionnaire ranges from 0 to 24. Score between 0-5, 6-10, 11-12, 13-15 and 16-24 indicate lower normal daytime sleepiness, higher normal daytime sleepiness, mild excessive daytime sleepiness, moderate excessive daytime sleepiness and severe excessive daytime sleepiness respectively.

**Results:** Around 400 students totally from these five faculties participated in the study. Of all, 63.3% were female. The mean age was  $20.8 \pm 2.5$  years. The mean score of total daytime sleepiness was  $17.9 \pm 3.6$ . Higher and lower mean score were related to items "sitting and talking with someone" and "sitting quietly after lunch", respectively. Demographics characteristics did not affect students' daytime sleepiness significantly ( $P > 0.05$ ).

**Conclusion:** The present study showed that daytime sleepiness is prevalent among students in medical universities. There is a need to increase the attention to this problem and planning to decrease it.

**Citation:** Nasiri Avanaki S, Nasiri Avanaki N, Soleimani P, Rafiei H. Prevalence of daytime sleepiness among medical university students. J Prev Epidemiol. 2018;3(2):e01.



## Introduction

Sleep is divided into two cyclic, NREM (non-rapid eye movement) and REM (rapid eye movement) sleep (1). Duration of sleep and wakefulness is controlled centrally by a biologic clock in the hypothalamus (2). Enough sleep is vital for everyone (3). Humans usually need at least seven hours' night sleep in a day (4). Factors such as sleep quantity, sleep time, sleep quality and sleep regularity affect human sleep health (4).

Having enough sleep is very important for college students. Evidence showed that sleep disorders such as daytime sleepiness, sleep deprivation, and irregular sleep schedules affect university students' success (2,5). In a greater study in 2008, researchers examined the rate and risk of sleep disorders among university students in the USA. The results of this study revealed that a high proportion of students (27%) are at risk of one type for sleep disorders. This study concluded that the rate of sleep disorders may negatively affect the students' academic success (6). In other study in 2010, Gilbert and

## Core tip

Daytime sleepiness is prevalent among students in medical universities. There is a need to increase attention to this problem and planning to decrease it.

Weaver examined the relationship between university students' quality of sleep and sleep quality and academic success. Sample of their study were 103 males and female students in University of Minnesota. The results of the study by Gilbert and Weaver showed that students' quality of sleep has a significant relationship with their grade-point average (GPA) (7). In another study, Jain and Verma examined the prevalence of sleep disorders among university students in India. They examined 1423 student, using SLEEP-50. Results of their study revealed that 25% of students are at risk for one types of sleep disorders. Among these disorders, obstructive sleep apnea, narcolepsy, sleepwalking, nightmares and insomnia can be mentioned (8).

## Objectives

One type of sleep disorders is daytime sleepiness. It may be more prevalent among university students due to their lifestyle. However, studies on medical university students' daytime sleepiness are very limited, especially among Iranian students. In the present study, we examined daytime sleepiness among Qazvin University of Medical Sciences students.

## Patients and Methods

### Study population

This cross-sectional study was conducted in five faculties including medicine, nursing and midwifery, dentistry, para-medicine and health in Qazvin in 2017. Around, 400 students from these five faculties were randomly selected by using sample size formula. Students, who used hypnotic medication or psychological disorders have been diagnosed among them, were excluded from the study. Data collection was carried out in the university environment during day time by researchers. Student received oral information about the study's methods and objectives before participation. They were assured that the data, remained confidential. Students were requested to complete and return the questionnaires in 1 hour.

### Data collection

We used two instruments for data collection. The demographic data were collected, using a self-report checklist. This checklist included items such as age, gender, marital status, economical status and the duration of education. For measuring students' daytime sleepiness, we used Epworth Sleepiness Scale (ESS). This questionnaire has eight questions and examines the chance of falling asleep in daily situations. Items of this questionnaire scored in a 3-Likert point from 0 to 3 (0=no chance of dozing, 1=slight chance of dozing, 2=moderate chance of dozing, 3=high chance of dozing). Total score in this questionnaire ranges from 0 to 24. Score between 0-5, 6-10, 11-12, 13-15 and 16-24 indicate lower normal daytime sleepiness, higher normal daytime sleepiness, mild excessive daytime

sleepiness, moderate excessive daytime sleepiness and severe excessive daytime sleepiness, respectively (9). Validity and reliability of this scale was determined in desired levels in previous studies (10).

### Ethical issues

The research followed the tenets of the Declaration of Helsinki. Before the study, written informed consent was obtained from all participants who participated in the study. Permission for conducting the present study was obtained from Research Department of Qazvin University of Medical Sciences (ethic code# IRQUMS.REC.1396.66). All information about individuals was coded and kept confidential.

### Statistical analysis

After data collection, data was entered into SPSS software version 24. For data analysis, we used statistical tests such as Pearson correlation test, independent *t* test and one-way analysis of variance (ANOVA). A *P* value under 0.05 was considered significant.

## Results

Around 400 students totally from these five faculties participated in the study. Of all, 63.3% were female. The mean age was  $20.8 \pm 2.5$  years. Most of them were single (86%). The mean score of total daytime sleepiness was  $17.9 \pm 3.6$ . Higher and lower mean score were related to items "sitting and talking with someone" and "sitting quietly after lunch", respectively (Figure 1). The mean score of daytime sleepiness was 18.04 in female and 17.74 in male students. Based on the results of one sample *t*-test, this difference between the groups was not statistically significant ( $P=0.423$ ). The mean score of daytime sleepiness was 18.37 in married and 17.85 in single students. Based on the results of one sample *t*-test, this difference between these groups was not statistically significant ( $P=0.344$ ). Results of Pearson's correlation test did not show a significant relationship between the mean score of daytime sleepiness, students age ( $P=0.299$ ,

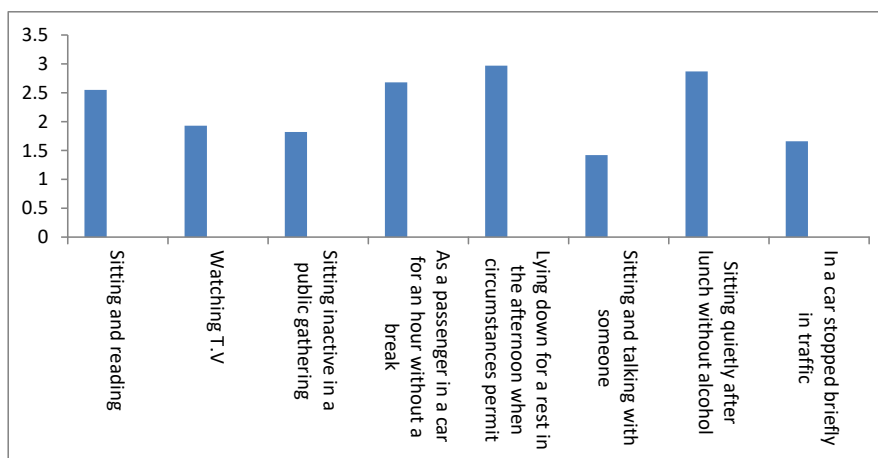


Figure 1. Mean score of students responses to each question.

$r=0.052$ ) and educational semester ( $P=0.306$ ,  $r=0.051$ ). For comparing the mean score of daytime sleepiness among students in different faculties, we applied one-way ANOVA test. According to this test, the difference between the mean score of daytime sleepiness was not significant among students in different faculties. However, the mean score of daytime sleepiness was higher in dentistry students and lower in nursing students ( $P=0.70$ ). Results of one-way ANOVA test also showed that the difference between the mean score of daytime sleepiness among students with different economic status was not significant ( $P=0.995$ ).

## Discussion

Sleep quality and hygiene are important issues for university students' educational success (11). In the present study, we examined the medical university students' daytime sleepiness. According to the findings of our study, daytime sleepiness was common among the study samples.

Several factors such as stress and anxiety during education courses, poor nutrition, excessive caffeine and tea consumption, physical and psychological pressures, class curriculum and living in a crowded dormitory can affect university students' sleep. In addition to this finding, many students in medical universities have hospital night shifts. For instance, medical and nursing students in their education courses have night shifts. Previous studies on daytime sleepiness among medical university students are limited. In a study in 2016, Al-Zahrani et al examined the rate of daytime sleepiness among 161 Saudi Arabian medical students. Similar to our study, Al-Zahrani et al used ESS for determining the students' daytime sleepiness. Similar to the finding of present study, Al-Zahrani et al study showed that daytime sleepiness is a common phenomenon among Arabian medical students in Saudi Arabia (12). In other study, Masoodzade et al, examined daytime sleepiness among medical students. Sample of their study were 100 medical students studying in Mazandaran University of medical sciences. Similar to our study, Masoodzade et al, used ESS to assess students' sleepiness. Around 47% of students in their study were reported a moderate to severe degree of daytime sleepiness. Consuming opioids was the only significant factor that increased the daytime sleepiness among medical students in Masoodzade et al study (10). In another study, Demir et al examined daytime sleepiness among 382 nursing students in Turkey. They used ESS to assess day time sleepiness. Based on their findings, nursing students were suffered from daytime sleepiness. Factors such as marital status, coffee or tea consumption, lifestyle, poor academic achievement and using the internet during daytime significantly increased the nursing students' daytime sleepiness (13). In another study in 2017, Kaur and Singh examined the prevalence of daytime sleepiness among 1215 undergraduate students in India. Similar to our study, they applied ESS to assess students' sleepiness. Similar to our findings, their results showed that daytime sleepiness is prevalent among university students. Kaur and Singh found that factors such as coffee, tea, alcohol

and cigarette consumption increase the rate of daytime sleepiness (14).

## Conclusion

The present study showed that daytime sleepiness is prevalent among students in medical universities. The consequences of daytime sleepiness may cause a lot of problems for medical students and can lead to a lower grade point average, decreased the chance of successful academic achievement, poor understanding, increased psychological problems, and increased the risk of errors in clinical courses. There is a need to increase the attention to this problem and planning to decrease it. Further studies are needed in this regard. Interventional studies are also necessary to determine useful interventions in order to decrease daytime sleepiness.

## Study limitation

Using a self-report questionnaire for data collection is a limitation of this study.

## Acknowledgments

This study was approved and granted by Qazvin University of Medical Sciences.

## Authors' contribution

HR as the corresponding author and supervisor conducted the study. Data collection was performed by SNA, NNA and PS. The manuscript was written by HR and SNA. All authors read and signed the final version of paper.

## Conflicts of interest

The authors declare that they have no conflict of interest.

## Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

## Funding/Support

None.

## References

1. Kishi A, Yasuda H, Matsumoto T, Inami Y, Horiguchi J, Tamaki M, et al. NREM Sleep Stage Transitions Control Ultradian REM Sleep Rhythm. *Sleep*. 2011;34:1423-32. doi: 10.5665/SLEEP.1292.
2. Alibakhshi-Kenari M. Comparative Evaluation of the Sleep Quality in Male Verses Female Students of Nursing at School of Nursing and Midwifery of MBU. *Am J Nurs*. 2014;3: 26-33. doi:10.11648/j.ajns.20140303.11.
3. Mashayekhi F, Rafiei H, Arab M, Abazari F, Ranjbar H. The effect of sleep quality on patients in a coronary care unit. *Br J Cardiol Nurs*. 2013;8:443-7.
4. Watson NF, Badr MS, Belenky G, Bliwise DL, Buxton OM, Buysse D, et al. Recommended amount of sleep for a healthy adult: a joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society. *Sleep*. 2015;38:843-4. doi: 10.5665/sleep.4716.
5. Hershner SD, Chervin RD. Causes and consequences of sleepiness among college students. *Nat Sci Sleep*. 2014;6:73-84. doi:10.2147/NSS.S62907.
6. Gaultney JF. The Prevalence of Sleep Disorders in College Students: Impact on Academic Performance. *J Am Coll Health*. 2010;59:91-7. doi: 10.1080/07448481.2010.483708.
7. Gilbert SP, Weaver CC. Sleep quality and academic

- performance in university students: A wake-up call for college psychologists. *J College Stud Psychother.* 2010;24:295-306. doi.org/10.1080/87568225.2010.509245.
8. Jain A, Verma S. Prevalence of sleep disorders among college students: A clinical study. *J Adv Med Dent Sci Res.* 2016;4:103-6.
  9. About the ESS. <http://epworthsleepinessscale.com/about-the-ess/>.
  10. Masoodzade A, Zangane A, Shahbaznezhad L. Daytime sleepiness in medical students at Mazandaran university of medical sciences. *J Mazandaran Univ Med Sci.* 2006;16:75-80.
  11. Sarbazvatan H, Amini A, Aminisani N, Shamshirgaran SM. Sleep quality and academic progression among students of Tabriz University of Medical Sciences, Northwest of Iran. *Res Dev Med Educ.* 2017;6:29-33. doi: 10.15171/rdme.2017.006.
  12. I-Zahrani JM, Aldossari KK, Abdulmajeed I, Al-Ghamdi SH, Al-Shamrani AM, Al-Qahtani NS. Daytime sleepiness and academic performance among Arab medical students. *J Thorac Dis.* 2016;8:289-95. doi: 10.3978/j.issn.2072-1439.2016.AB006.
  13. Demir G. Daytime sleepiness and related factors in nursing students. *Nurse Educ Today.* 2017;59:21-5. doi: 10.1016/j.nedt.2017.08.003.
  14. Kaur G, Singh A. Excessive daytime sleepiness and its pattern among Indian college students. *Sleep medicine. Sleep Med.* 2017;29:23-8. doi: 10.1016/j.sleep.2016.08.020.