



## Daytime sleepiness and related factors in nursing students



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### ABSTRACT

**Background:** Evaluation of the frequency and causes of daytime sleepiness in nursing students because it is an important factor in improving the health status of the students, controlling sleep problems, improving students' academic achievements, and maintaining a healthy lifestyle.

**Aim:** The aim of this study was to determine the prevalence of daytime sleepiness in nursing students and the factors associated with it.

**Design:** A cross-sectional research design was used in this study.

**Participants:** Nursing students ( $n = 382$ ).

**Method:** Data were collected using a questionnaire prepared by the authors to assess socio-demographic characteristics, sleep habits, and problems of nursing students and the Epworth Sleepiness Scale (ESS), which assesses daytime sleepiness. Descriptive statistics included numbers, percentages, mean, median, and standard deviation. Mann–Whitney U test (Z) and Kruskal–Wallis (KW) analysis of variance were used for evaluating the relationship between ESS scores and independent variables.

**Results:** The prevalence of daytime sleepiness in the students was found to be 10.5%. Those in the 2nd grade, who were married, who did not consume coffee or tea, lived alone, regarded their own academic achievement as poor, and used the Internet during morning hours experienced increased daytime sleepiness. Moreover, students who talk in their sleep, grind their teeth, feel restless before sleep, experience problems in falling asleep, and wake up at night were found to experience increased daytime sleepiness.

**Conclusions:** Daytime sleepiness is a considerably common health problem in nursing students. This study found that daytime sleepiness is associated with individual characteristics, lifestyle and consumption habits, and sleep habits.

### 1. Introduction

Sleep is extremely important for adolescents to properly maintain their physical growth, emotional stability, behavioral balance, and cognitive functions (Beebe, 2011). However, students experience problems with sleep, and the prevalence of daytime sleepiness is particularly high in adolescence. The prevalence of daytime sleepiness among students varies from study to study and differs by the study areas (by country). The prevalence of daytime sleepiness ranged from 9% to 32.5% in the studies conducted in Turkey (Altıntaş et al., 2006; Kocoglu and Arslan, 2011; Senol et al., 2012) whereas it ranged from 12.7% to 68.5% in studies conducted abroad (De Souza Vilela et al., 2016; Ford et al., 2015; Gaina et al., 2007; Mirghani et al., 2015).

### 2. Background

Studies found that there are several risk factors that affect daytime sleepiness in students: sexual maturity, age, gender, obesity, school

hours, use of medicines, caffeine intake, use of energy drinks, perceiving poor economic status, feeling uncertain about the future, smoking, alcohol use, using the Internet to play games, use of the computer, going to bed late (after 22:00), waking up early (before 08:00), having problems in falling asleep, talking in sleep at night, grinding their teeth, and feeling restless before sleeping (Calamaro et al., 2009; Calamaro et al., 2012; Kocoglu and Arslan, 2011).

Daytime sleepiness is an important public health issue that may cause serious problems. It negatively affects the performance, cognitive functions, and mental condition of school children and causes them to have difficulties in concentrating; to suffer from fatigue; and to experience irritability, anxiety, and depression (Fernández-Mendoza et al., 2009; Millman, 2005). Furthermore, insufficient sleep is related to an increase in the risk of motor vehicle accidents, sports injuries, and work accidents. Wheaton et al. (2016) found that students who sleep for < 7 h on school nights show higher levels of risky behavior (infrequent seatbelt use, riding with a drunk driver, and drinking and driving). Sleep problems are also associated with behavioral problems

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(Neu et al., 2011). Inadequate sleep (< 7 h/night) has also been associated with negative eating habits, poor internal regulation of food, and binge-eating behaviors (Quick et al., 2016). The prevalence of daytime sleepiness and factors affecting it should be thoroughly examined to approach a solution for these sleep problems among students.

University students in general have an irregular sleep pattern. The fact that education programs conducted for healthcare professions, such as nursing, are intensive and tiring and that nursing students in Turkey take theoretic and applied courses simultaneously forces them to sacrifice their sleep hours. There are 178 universities that provide nursing education in Turkey, and only six of these universities offer both regular and evening courses. The Health College of Nursing in the university in which we conducted the present study offer regular and evening courses. The courses in daytime education start at 8:15 in the morning and end at 16:45. The courses in night education start at 17:00 and end at 22:45. In addition, both daytime and night education students perform their clinical work duties between 08:00 and 16:00. Freshman nursing students perform clinical practice 1 day in a week; sophomore and junior nursing students perform clinical practice 1 and a half days in a week; and senior nursing students perform clinical practice 2 days in a week. The night education nursing students may sacrifice their sleeping hours to a greater degree because they take practical courses during the day and they receive theoretical education at night; therefore, they may often suffer from daytime sleepiness. Accordingly, the aim of this study was to determine the prevalence of daytime sleepiness as an important sleep problem among night education nursing students and its associated the factors.

### 3. Methods

#### 3.1. Design and Sample

In Turkey, an academic year in higher education is divided into two terms (fall and spring). This research was conducted during the fall term. This cross-sectional study was conducted among night education nursing students at the Vocational School of Health Sciences at a university in the 2016–2017 academic year. The research population comprised 390 students attending 1st, 2nd, 3rd, and 4th grade evening courses at the Health College of Nursing. The questionnaire was administered to a total of 382 students (98%) as eight students did not want to participate in the study or they were unavailable at the time of the study. In conclusion, we reached the whole research population, and almost all of the students in the original sample participated in the study.

#### 3.2. Data Collection Methods and Tools

##### 3.2.1. Questionnaire

A questionnaire prepared by the researchers to assess certain individual characteristics, sleep habits, and problems of the students was used for data collection. Within the scope of individual characteristics and habits, age, gender, grade, body mass index (BMI), marital status, working status, way of working, income level, smoking and its duration, alcohol intake and its duration, coffee and tea intake, being on regular medication, residence, and academic achievements of the students were assessed. Sleep habits and problems were assessed as walking, talking, and grinding teeth while asleep, feeling restless before sleeping, having problem in falling asleep, waking up at night, time for bed and waking hour on weekdays

Daytime sleepiness of the students was evaluated using Epworth Sleepiness Scale (ESS). Students with an ESS score of  $\geq 10$  are considered to have excessive daytime sleepiness (İzci et al., 2008). In the present study, students with an ESS score of  $\geq 10$  points were considered to suffer from excessive daytime sleepiness, whereas students with an ESS score of  $\leq 9$  points were considered to have no problem of daytime sleepiness.

##### 3.2.2. ESS

This 8-item scale is based on self-report, is of proven validity and reliability, and is easy to apply and understand for assessing the general daytime sleepiness level in adults. It aims to assess the chance of falling asleep or dozing off during eight different daily life situations. Each question is answered choosing points ranging from 0 to 3. This questionnaire examines study participants chance of falling asleep in certain situations in an ordinary day when they are not extremely tired. The method of scoring is identical in all questions. The patient gives the score of 0 to 3 for each situation where there is no chance, slight chance, moderate chance, and high chance of falling asleep, respectively. The highest possible score obtained from the scale is 24, and the lowest score is 0. Obtaining high scores from ESS indicates that the level of daytime sleepiness is high (İzci et al., 2008)

Before the researchers proceeded to implement the study, a preliminary test of the questionnaire form was performed with 10 midwifery students who were not included in the study. This preliminary testing showed that data collection tools were completed in 10–15 min, that the questions included in them were understandable, and that data obtained were adequate to collect the intended data in the study. During the implementation of the study, data were collected in class settings based on self-reports from the students.

#### 3.3. Data Analysis

Statistical Package of Social Sciences (SPSS 20.0) software was used in the statistical analysis. Kolmogorov–Smirnov test, histograms, and Q-Q plots were used to test normality of the variables. As the variables were non-normally distributed, non-parametric tests were used in the analysis. Descriptive statistics included numbers, percentages, mean, median, and standard deviation. Mann–Whitney U test (Z) and Kruskal–Wallis (KW) analysis of variance were used for evaluating the relationship between ESS scores and independent variables. A value of  $p < 0.05$  was considered to be statistically significant.

#### 3.4. Ethical Considerations

Written approval was received from the Rectorate of the University and the relevant directorates, and approval was also obtained from the ethics committee of Ahi Evran University (2016-11/03) to conduct this study. The aim of this study was explained to the students who participated and their verbal and written consent was received.

### 4. Results

It was observed that the prevalence of daytime sleepiness among students was 10.5%. The students' mean time for going to bed on weekdays was  $8.42 \pm 4.40$  p.m., whereas their waking hour was  $8.09 \pm 2.36$  a.m., their mean time for going to bed on weekends was  $6.36 \pm 4.67$  p.m. and their mean waking hour was  $9.23 \pm 2.91$  a.m. This means that the students sleep approximately 12 h on weekdays, but they sleep approximately 14 h on weekends (Table 1). The students used the internet for  $4.41 \pm 3.42$  h on an average and watched TV for

**Table 1**  
Sleepiness of the students in terms of distribution of ESS scores and their average sleeping hour ( $n = 382$ ).

| Scale score and its assessment  | n   | (%)  | $\bar{x} \pm ss$ |
|---------------------------------|-----|------|------------------|
| 10 and lower score (not sleepy) | 342 | 89.5 |                  |
| 11 and higher score (sleepy)    | 40  | 10.5 |                  |
| Total                           | 382 | 100  |                  |
| Sleeping hour on the weekdays   |     |      | $8.42 \pm 4.40$  |
| Waking hour on the weekdays     |     |      | $8.09 \pm 2.36$  |
| Sleeping hour on the weekend    |     |      | $6.36 \pm 4.67$  |
| Waking hour on the weekend      |     |      | $9.23 \pm 2.91$  |

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