Original Article

Examination of Sleep Quality and Factors Affecting Sleep Quality of a Group of University Students

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Abstract

Aim: The present research was performed to review the quality of sleep and factors affecting sleep quality in a group of university students.

Methodology: The present descriptive research was carried out with 512 students attending to Ege University in 2016- 2017 academic year who were determined through stratified sampling method. Data were collected through Introductory Information Form and Pittsburg Sleep Quality Test (PSQT). Research data were analyzed by numbers, average, line percentage, Mann- Whitney U and Kruskal- Wallis analyses.

Results: The average of students' total score of PSQT were 6.64± 2.73 and this average differences were statistically significant from students' income status, the staying place, the headcount in the same room for sleeping the internal and external factors which influence sleeping, regular sleeping habits, having problems during sleep, waking up feeling well rested in morning, having family member(s) with sleep problems and smoking and alcohol using (p<0.05, p <0.01).

Conclusion: The sleep quality of students was low and it concluded that quality influenced by some socio-demographic variables, regulation of sleep, conditions related with staying place and use of drug and substance.

Key Words: University students; qualified sleep; influencing factors.

Introduction

Sleep is one of the basic requirements of human life, such as nutrition, respiration, and excretion, and is in the top priority and bottom step according to Motivation Theory, also known as the Maslow's (1958) Hierarchy of Needs. The individual must have a healthy and quality sleep cycle, which can affect physical and spiritual well-being, as well as being a result of physical and spiritual well-being (Barros et al. 2019).It is an active process to go to sleep and to maintain sleep. It is known that during sleep, neurophysiological recovery and repair are performed; protein synthesis, cell mitosis, and growth hormone release are increased, while catabolic hormones such as adrenaline and corticosteroids are decreased (Tsai et al. 2019). During sleep, the body prepares for a new day while functions in all systems of the organism are reduced to a basal level (Fesci and Gorgulu 2005). All these functions of sleep are possible through a quality sleep process. Sleep quality is a subjective perception that includes aspects of sleep depth, relaxation, as well as quantitative characteristics such as sleep latency, sleep duration, and the number of awakenings in the night, and defines the physiological and psychological functionality of sleep (Ustun and Cınar-Yucel 2011). Sleep quality is affected by many physical, psychological, and social factors.

In addition to neurophysiological sleep disorders such as insomnia, sleep-related respiratory disorders, circadian rhythm disorders, psychosocial problems such as mental distress and stress, inability to cope effectively with stress, communication problems and the sense of loneliness, increased levels of anxiety are known to decrease sleep quality (Segrin and Burke 2015; Lo Martire et al. 2019). An inefficient sleep primarily affects the person indirectly as well as the person's environment negatively, which can turn into a vicious cycle (Mollayeva et al 2016).Studies examining sleep quality in university students show that students' sleep quality falls with increasing risk (Hicks, Fernandez and Pellegrini 2001; Park et al. 2019), one in ten people over fifteen years of age experience sleep problems and more than 59% of students have low sleep quality (Aysan et al. 2004; Lund et al. 2010; Chung et al. 2015). Recommended sleep duration for young adults, 18-25-year-old college-age is 7-9 hours, but it is underlined that the keyword for efficient sleep is quality, not duration (Chaput, Dutili and Sampasa-Kanyinga 2018). The burdens of the obligations of adulthood, the transition to independent living and separation from family, financial difficulties, academic and social anxiety, relationship problems, and coping of college students, and many factors that are specific to this period affects the quality of sleep (Lund et al. 2010).Sleep should also be treated with caution from the point of view of nursing students who are primarily required to work with individuals who need care because of its impact on physical, emotional, motor, and cognitive functioning (Tsai et al. 2019). While nursing students experience more intense stress due to the workload, clinical applications with shifts, chronic illness and the burden of working with cases such as death, communication problems within the team, lack of knowledge, and skills than their peers (Labrague 2013), being a nursing student, has risks in terms of sleep quality (Silva et al. 2019). Research shows that one in every four nursing students in the world experiences insomnia (Angelone et al. 2011) and one in every two students in Turkey has low sleep quality (Yılmaz, Tanrıkulu and Dikmen 2017), while one in every ten students experiences daytime sleep problems (sleepiness) (Demir 2017). In addition to affecting both the physical and mental health of nursing students, deteriorating sleep quality may also lead to safety problems, especially during clinical practice (Leger et al. 2014; Zhang, Peters and Bradstreet 2018; Park et al. 2019).

Aim; The study aims to examine the sleep quality of a group of university students and the factors affecting sleep quality. In this context, the Pittsburg Sleep Quality Index (PSQI) scores of the study were considered as the dependent variable and hypothesis was tested within the concept of the research aiming at PSQI score averages will show significant difference according to the socio-demographic characteristics, sleep patterns and conditions associated with the environment, and drug-substance use habits.

Methodology

Research type, Population, and Sample: The descriptive and cross-sectional research was conducted in the 2016- 2017 academic year at a Turkish public university located in a metropolitan area in the Western geographic region of the country. Students of the Faculty of Nursing have been recognized in the population of research. Stratified random method was used for sampling. The sample, which proved in the range of 95% confidence to represent a population of 1447, was stratified based on students' class degree availability. The survey was completed with a sample of 512 volunteer students who volunteered to participate in the research and filled the measurement tools.

Data Collection Tools

Information Form and PSQI were used in the collection of data: *Information Form* developed by researchers and consists of 20 questions in total to determine (8 questions) student's default socio-demographic characteristics that affect sleep quality, (8 questions) sleep pattern and conditions of living environment, (4 questions) drug and substance use habits.

The Pittsburg Sleep Quality Index (PSQI); developed by Buysee et al. (1989), is a total of 19-question self-report scale that evaluates sleep quality and disorder in the past one-month time period. PSQI is considered an easy tool to use for individuals, easy to interpret for clinicians. The lowest total score from PSQI is "0", and the highest total score is "21" while the total score greater than five indicates poor sleep quality. The results from PSQI do not indicate the presence of a sleep problem from a clinical standpoint. The main function of the tool is to evaluate the quality of sleep. In international studies, the tool has

been shown to have internal consistency, test-retest reliability, and scope validity in healthy and patient populations (Mollayeva et al 2016). In our country, PSQI's validity and reliability study were conducted by Agargun et al. (1996). The Cronbach's alpha value of the scale in this research has been found as .84.

Data Collection: The data were collected at one time, except for the midterm and final weeks, where students were likely to experience distraction or anxiety, and the sampling process was completed within a month. Before the survey application, students were informed about the purpose of the research. Each student is given 15 minutes to answer the questionnaire on their own so that they can use a quiet and secure space. The confidentiality of the student identity was ensured by requiring them to fill out questionnaire forms anonymously.

Evaluation of Data: In the evaluation of research data, continuous numerical variables were expressed as mean and minimum-maximum values, while categorical variables were expressed as number and percentage values. Since whether the continuous numerical variables fit the normal distribution group numbers were higher than thirty, it was evaluated by the Kolmogorov Smirnov test. After determining that the distribution of PSQI total score averages based on the variables examined was not normal, intergroup significance was examined with the significance of the difference between mean in independent binary (Mann-Withney U) and multiple (Kruskall Wallis) groups. Further analyses of which group the difference was due to in multiple independent groups were continued with bilateral comparisons. The statistical significance level of the study was considered as $p<0.05$.

Ethics of the Research: Permission to apply for the research was obtained from the relevant university Scientific Research and Publication Ethics Board (date:20/04/2017, number:54-2017) and from the faculty dean's office. The aim of the survey was explained to the students before the survey application, their identities will be kept secret, participation is voluntary and the data will not be used for any other purpose. Written consent was obtained from the students that they had received the information and volunteered to participate in the research.

Results

The average age of the students included in the study was 21.43 ± 1.46 years (min= 18.00, max= 27.00), 90.2% were female, 98.2% were single, 74.8% were graduates of anatolian high school, 32.6% were in the 3rd grade, 78.8% perceived income and expense status as equivalent, 80.7% had a nuclear family structure, 62.3% lived in a dormitory, and 57.8% had no hobbies that they did regularly outside school.74.0% of the students staying in the same room with more than one person, 59.2% thought that there were no external factors that affect the sleep 63.9% thought that there were no internal factors, %39.8% noted that they had not a regular sleep habit, 77.1% had problems during sleep, however, 60.9% woke up rested in the morning and 74.4% did not know someone in the family who have sleeping problems It was found that 86.3% of the students did not smoke and 78.9% did not drink alcohol, but 81.8% drank caffeinated beverages, 89.1% did not have a disease requiring regular medication, and 97.5% did not receive professional help with their health problems. Students' PSQI subscale and total score means are given in Table 1.

Table 1: Investigation of Students' PSQI Subscales and Total Score Means

PSQI	Score		Min- Max	Scale Range
	$\overline{X}$	SD		
Sleep Quality	1.36	0.66	0- 3	0- 3
Sleep Onset Latency	1.30	0.89	0- 3	0- 3
Sleep Duration	1.00	0.89	0- 3	0- 3
Sleep Efficiency	0.12	0.45	0- 3	0- 3
Sleep Disturbance	1.39	0.62	0- 3	0- 3
Sleep Medication	0.13	0.47	0- 3	0- 3
Daytime Dysfunction	1.35	0.86	0- 3	0- 3
Total Score	6.64	2.73	0- 18	0- 21

X= Mean, Sd=Standard Deviation

Table 2: Distribution of Students' PSQI Total Score Means According to Socio-demographic Characteristics

Socio- demographic Characteristics	n	X± Sd	KW	MWU	p
Gender					
Woman	462	6.68±2.62		10337.00	0.219
Man	50	6.26±3.57			
Marital Status					
Single	503	6.65±2.72		2045.50	0.618
Married	9	6.11±3.22			
Graduated High School					
Anatolian High School	383	6.71±2.76			
Standard High School	88	6.47±2.43	1.960		0.581
Health Vocational High School	7	5.00±4.32			
Other	34	6.71±2.67			
Class Degree					
1st Grade	102	6.67±2.51			
2nd Grade	103	6.94±2.85	2.174		0.537
3th Grade	167	6.56±2.78			
4th Grade	140	6.47±2.73			
Income rate					
Low	82	7.88±3.27			
Avarage	403	6.44±2.55	13.80		**0.001***
High	27	5.89±2.50			
Family Structure					
Nuclear	413	6.56±2.78			
Extended family	69	6.71±2.31	3.619		0.164
Destructed family	30	7.53±2.85			
Place of Residence					
Student Dormitory	321	6.83±2.59			
Family Home	93	5.71±2.50			
Home with Friends	82	7.22±3.08	22.86		**0.000***
Home with Siblings	9	6.67±3.16			
Home alone	8	3.75±2.87			
Regular Hobbies					
Yes	216	6.50±2.80		29894.00	0.207
No	296	6.73±2.68			

KW: Kruskall Wallis   MWU: Mann-Withney U   *p<0.01

Table 3: Distribution of Students' PSQI Total Score Means According to the Sleep Pattern and the Environment Which Live In

Sleep Pattern, Sleep Environment and Attitudes	n	X± SD	KW	MWU	p
Number of People in Fitting Room					
Alone	133	6.45±3.02	9.162		**0.027***
2 people	97	6.21±2.45			
3 people	35	6.34±2.85			
4 or more people	247	6.95±2.62			

	n	X±Ss	MWU	p
External Factors Affecting Sleep				
Yes	209	7.51±2.53	21026.00	**0.000****
No	303	6.04±2.70		
Internal Factors Affecting Sleep				
Yes	185	7.83±2.74	18331.50	**0.000****
No	327	5.97±2.48		
Regular Sleep Habits				
Yes	308	5.55±2.30	12389.00	**0.000****
No	204	8.29±2.48		
Problems During Sleep				
Yes	117	8.67±2.55	10345.00	**0.000****
No	395	6.04±2.48		
Wake Up Feeling Well-Rested In Mornings				
Yes	200	5.21±2.24	14989.00	**0.000****
No	312	7.56±2.61		
Sleep Problems in Family				
Yes	131	7.47±2.77	18721.00	**0.000****
No	381	6.36±2.66		
Taking Professional Help				
Yes	13	9.25±3.82		
No	499	7.73±2.64	839.50	0.265

KW: Kruskall Wallis   MWU: Mann-Withney U   *p<0.05   **p<0.01

Table 4: Distribution of Students' PSQI Total Scores According to Drug and Substance Using Habits

Drug and Substance Using Habits	n	X± Ss	MWU	p
Smoking				
Yes	70	7.91±3.07	11178.50	**0.000****
No	442	6.44±2.62		
Using of Alcohol				
Yes	108	7.72±3.07	16159.00	**0.000****
No	404	6.35±2.55		
Using of Caffeine				
Yes	419	6.70±2.66	18644.00	0.513
No	93	6.39±3.01		
Using of Drug Regularly				
Yes	56	7.04±3.06	11834.00	0.368
No	456	5.59±2.68		

MWU: Mann-Withney U   **p<0.01

The distribution of the students' PSQI total score means according to sociodemographic characteristics is given in Table 2. According to this, the sleep quality of the students who had high income and stayed home alone was

significantly higher than the other groups (p<0.01) (Table 2).

Table 3 shows the distribution of the students' PSQI total score means according to their sleep patterns and conditions associated with the living environment. It is found that the students who sleep in a room for two, who have no external or internal factors affecting their sleep, who have regular sleep habits, who do not have problems during their sleep, who wake up well-rested in the morning, who do not have any problems in their family sleep quality was significantly higher than the other groups (p<0.05) (p<0.01) (Table 3).

The distribution of the students' PSQI total score means according to drug and substance use habits is given in Table 4. It was determined that students who did not smoke or drink alcohol had a significantly higher quality of sleep than those who did (p<0.01) (Table 4).

The PSQI total score average of the students was not affected by variables such as gender, marital status, high school graduation, class degree, family structure, regular hobby (Table 2), professional help status (Table 3), caffeine use, and regular drug use (Table 4) (p>0.05).

Discussion

In the study of sleep quality and factors affecting sleep quality of a group of university students, the PSQI total score mean was 6.64± 2.73 point (range= 0- 21), and the most problematic components in terms of sleep quality were the components of sleep disturbance and subjective sleep quality, while the most trouble-free components were the components of sleep efficiency and sleep medication use. The PSQI's total score mean is greater than five, indicating poor sleep quality (Agargun Kara and Anlar 1996; Mollayeva et al. 2006). When the score of the students is evaluated in this sense, it is seen that the sleep quality of the students is poor. In both international and national studies conducted with students on this subject, it was determined that students had poor sleep quality (Altıntas et al. 2006; Park et al. 2019).

In the study, students' perception of income rate affects sleep quality and those who rate income rate as high also have higher sleep quality. In the literature, it is stated that the economic state and the concerns associated with income can affect sleep hygiene and quality (Basner, Spaeth and Dinges 2014; Gunes and Arslantas 2017). More than half of the university students work in an income-generating job in a period or during their education life, which can usually last until late at night and during out-of-school times (Rochford, Connolly and Drennan 2009; Lederer et al. 2015). This suggested that students should work at night to fulfill their school-related responsibilities, indirectly affecting their quality of sleep.

In the literature, the sleep quality of the students who stayed home alone was found to be lower (Demir 2017), and the sleep quality of the students who stayed with their parents were found to be higher (Allen Gomes, Tavares and Pinto de Azevede 2009; Silva et al. 2016). When sleep quality is evaluated according to where students stay, the current study shows that students who stay home alone and students who stay with their family have higher sleep quality, while those who stay home with friends have lower sleep quality. It was evaluated that the high sleep quality of the students who stayed home alone was related to the sample group in which the study was conducted and that the number of students (8 people) who stayed home alone was low.

The number of people in the room in which they sleep is as important as the place where they sleep (Li et al. 2008). In the study, students who sleep in two rooms have higher sleep quality, and students who sleep in four or higher rooms have lower sleep quality. The study conducted by Yavuz Sari et al (2015) to examine the sleep quality and affecting factors of university students' sleep quality found that the lowest sleep quality was found in students sleeping in quadruple rooms. The fact that there are more people in the room means that there are more noise, stress, and activities that can be done together. It has been interpreted as a condition in which the sleep of individuals is expected to be affected.

The presence of external and internal factors affecting the sleep of the students participating in the research negatively affects sleep quality. In the literature, external factors such as living conditions and noise (Lawson, Wellens-Mensah and Nontogma 2019) and internal stressors such as academic concerns, interpersonal relationship problems, and mental problems negatively affect sleep quality (Silva et al. 2016; Demir 2017; Zhang, Chernaik and Hallet 2017; Zhang, Peters and Bradstreet 2018; Park et al. 2019). The

current research finding parallels these research findings.

Another variable that affects sleep quality is our biological clock, which ensures regular sleep habits (de Souza Lopes, Rodriguws Robaina and Rotenberg 2012). Our biological clock becomes unstable due to irregular bedtime and late bedtime, and sleep quality decreases in these people, increasing the prevalence of insomnia (Gunes and Arslantas 2017). The poor sleep quality of the students who do not have regular sleep habits can be explained by the knowledge of this literature.

In the study, students who had problems during sleeping and did not wake up rested in the morning had lower sleep quality. In the literature, it is stated that individuals who have problems before and during sleeping such as; difficulty in falling asleep, grinding teeth, talking in the sleep, waking up at night frequently have lower sleep quality, and these instances affect getting up rested in the morning, leading to daytime sleepiness (Yavuz- Sarı et al. 2015; Demir 2017). The research finding parallels the literature.

There are publications in the literature showing that the circadian rhythm, the regulator of the sleep alertness cycle, also depends on genetic characteristics (Seghal and Mignot 2011; Ozdel and Toker-Ugurlu 2016). However, it is not right to link the state of sleeping- wakefulness to only genetic characteristics, the circadian rhythm is also a condition with complex features where environmental factors and interactions are more frequent (Raizen and Wu 2011). The poor sleep quality of the students whose parents had sleep problems can be explained by the knowledge of the literature related to genetic and environmental factors.

The negative impact of alcohol and substance use on individuals' sleep quality has been studied and demonstrated in many studies (Rapp, Beuchele and Weiland 2007; Fernandez et al.2012; Yılmaz, Tanrıkulu and Dikmen 2017). Smoking has a stimulating effect due to the nicotine it contains, while alcohol affects the sleeping- waking up cycle and the time spent asleep (Aysan et al 2014; Uyar et al. 2016). Rapp et al. (2007) found a linear relationship between smoking cessation and prolonged sleep hours in their study and stated that nicotine withdrawal may also negatively affect sleep quality due to cravings. Similarly, Yilmaz et al. (2017) smoking and caffeine, Karatay et al. (2016) smoking, Isık

et al. (2014) alcohol and smoking, and Aysan et al. (2014) found that caffeine use negatively affects sleep quality in college students. The study found that while the quality of sleep of the students with caffeine consumption was not affected by this substance, the quality of sleep of the students with smoking and alcohol was lower. This finding parallels the study findings.

Conclusion

Students' sleep quality is generally poor, although they are better than national samples. It was concluded that the quality of the students' sleep was affected by factors such as income status, where they stayed, the number of people in the room in which they slept in, external and internal factors affecting sleep, regular sleep habit, problems during sleep, well-rested waking up condition in the morning, having sleeping problems in the family, regular alcohol and cigarette consumption. Another important result of the study is that in this group, which has so widely poor sleep quality and has problems associated with sleep, the behavior of seeking professional help for this is limited. This reveals the importance of activities to help address the lack of knowledge and motivation to change this attitude in student nurses who are already at risk for a poor quality sleep cycle. Student nurses' physical, mental, and occupational functioning in terms of sleep hygiene and habits in favor of a sleep cycle so that they can perform better in terms of quality should be carefully evaluated and should be supported.

References

Agargun MY, Kara H. & Anlar O. (2016) Validity and reliability of the Pittsburgh Sleep Quality Index. Turkish Journal of Psychiatry, 7: 107- 111. Available from: http://www.turkpsikiyatri.com/default.aspx?modul=ingilizceOzet&gFPrkMakale=210.

Allen Gomes A, Tavares J. & Pinto de Azevede MH. (2009) Sleep-wake patterns in Portuguese undergraduates, Acta Med Port, 22(5): 545- 552. doi: 10.1016/j.sbspro.2016.02.090

Altıntas H, Sevencan F, Aslan T, Cinel M, Celik E. & Onurdag F. (2006) The evaluation of sleep disorders and sleepiness state with epworth sleepiness scale of phase four students at Hacettepe University Faculty of Medicine. STED, 15(7): 114. Available from: http://www.ttb.org.tr/STED/2006/temmuz/hutf.pdf

Angelone AM, Mattei A, Sbarbati M. & Di Orio F. (2011) Prevalence and correlates for self-reported sleep problems among nursing students. J Prev Med Hyg, 52(4): 201- 208. Available

from: https://www.ncbi.nlm.nih.gov/pubmed/2244 2926

Aysan E, Karakose S, Zaybak A. & Ismailoglu EG. (2014Sleep quality and influencing factors in university students. DEUHYO ED, 7(3): 193- 198. Available from: http://www.deuhyoedergi.org/index.php/DEUHY OED/article/view/98.

Barros MBA, Lima MG, Ceolim MF, Zancanella E. & Cardoso TAMO. (2019) Quality of sleep, health and well-being in a population-based study. Rev Saude Publica, 30: 53-82.

Basner M, Spaeth AM. & Dinges DF. (2014) Sociodemographic characteristics and waking activities and their role in the timing and duration of sleep. Sleep, 37(12): 1889-1906.

Buysee DJ, Reynolds CF 3rd, Monk TH, Berman SR. & Kupfer DJ. (1989) The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. Psychiatry Res, 28: 193- 213.

Chaput JP, Dutili C. & Sampasa-Kanyinga H. (2018) Sleeping hours: What is the ideal number and how does age impact this? Nat Sci Sleep, 10: 421- 430.

Chung KF, Yeung WF, Yan-Yee Ho F, Yung KP, Yu YM. & Kwok CW. (2015) Cross-cultural and comparative epidemiology of insomnia: The Diagnostic and Statistical Manual (DSM), International Classification of Diseases (ICD) and International Classification of Sleep Disorders (ICSD). Sleep Med, 16(Apr 3): 477- 482.

de Souza Lopes C, Rodrigues Robaina J. & Rotenberg L. (2012) Epidemiology of insomnia: Prevalence and risk factors, can't sleep? In Issues of being an insomniac. Dr. Saddichha Sahoo (Ed.), ISBN: 978-953-51-0261-8, InTech,. doi: 10.5772/32991

Demir G. (2017) Daytime sleepiness and related factors in nursing students. Nurse Educ Today, 59: 21- 25. doi: 10.1016/j.nedt.2017.08.003

Fernandez MJ, Vgontzas AN, Bixler EO, Singareddy R, Shaffer ML, Calhoun SL, et al. (2012) Clinical and polysomnographic predictors of the natural history of poor sleep in the general population. Sleep 1, 35(5): 689- 697. doi: 10.5665/sleep.1832

Fesci H. & Gorgulu U. (2005) Sleep problems and nursing approach. Syndrome, 17 (2): 103- 106. Available from: http://www.logosyayincilik.com/arsiv/429/sendro m-aktuel-tip-dergisi-subat-2005

Gunes Z. & Arslantas H. (2017) Insomnia in nursing students and related factors: A cross sectional study. Int J Nurs Pract, 23: e12578.

Hicks RA, Fernandez C. & Pellegrini RJ. (2001) Striking changes in the sleep satisfaction of university students over the last two decades. Percept Mot Skills, 93(3): 660.

Isık O, Ozarslan A. & Bekler F. (2015) Relationship between physical activity, sleep quality and depression in university students. Nigde University Physical Education and Sport Sciences Journal, 9 (Special Issue): 65- 73.

Karatay G, Gurarslan Bas N, Aldemir H, Akay M, Bayır M. & Onaylı E. (2016) Examination of sleep habits and influencing factors of nursing students. HSP, 3 (1): 16-22. Doi: 10.17681 / hsp.34639.

Labrague LJ. (2013) Stress, stressors, and stress responses of student nurses in a government nursing school. Health Sci J, 7(4): 424- 435. Available from: http://www.hsj.gr/medicine/stress-stressors-and-stress-responses-of-student-nurses-in-a-government-nursing-school.pdf

Lawson HJ, Wellens-Mensah JT. & Nantogma SA. (2019) Evaluation of sleep patterns and self-reported academic performance among medical students at The University Of Ghana School Of Medicine And Dentistry. Sleep Disorders,

Lederer AM, Autry DM, Day CR. & Oswalt SB. (2015) The Impact of Work and Volunteer Hours on the Health of Undergraduate Students. J Am Coll Health, 63(6): 403-408.

Leger D, Bayon V, Ohayon MM, Philip P Ement P, Metlaine A, Chennaoui M. & Faraut B. (2014) Insomnia and accidents: Cross-sectional study (EQUINOX) on sleep-related home, work and car accidents in 5293 subjects with insomnia from 10 countries. J Sleep Res, 23(2): 143- 152.

Li S, Jin X, Yan C, Wu S, Jiang F. & Shen X. (2008) Bed and room-sharing in Chinese school-aged children: Prevalence and association with sleep behaviors. Sleep Med, 9(5): 555– 563.

Lo Martire V, Casuro D, Palagini L, Zoccoli G. & Bastianini S. (2019) Stress & sleep: A relationship lasting a lifetime. Neurosci Biobehav Rev. Sep 3. pii: S0149-7634; (19): 30149- 6.

Lund HG, Reider BD, Whiting AB. & Prichard JR. (2010) Sleep patterns and predictors of disturbed sleep in a large population of college students. J Adolesc Health, 46(2): 124-132.

Maslow AH. (1958) A Dynamic Theory of Human Motivation. In Stacey CL, deMartino MF, editors. Understanding human motivation. Cleveland, OH, US: Howard Allen Publishers; 1958, 26- 47.

Mollayeva T, Thurairajah P, Burton K, Mollayeva S, Shapiro CM. & Colantonio A. (2016) The Pittsburgh Sleep Quality Index as a screening tool for sleep dysfunction in clinical and non-clinical samples: A systematic review and meta-analysis. Sleep Medicine Reviews, 25: 52- 73.

Park S, Lee Y, Yoo M. & Jung S. (2019) Wellness and sleep quality in Korean nursing students: A cross-sectional study. Applied Nursing Research, 48: 13- 18.

Raizen DM. & Wu MN. (2011) Genome-wide association studies of sleep disorders. Chest, 139(2): 446- 452.

Rapp K, Beuchele G. & Weiland SK. (2007) Sleep duration and smoking cessation in student nurses. Addict Behav, 32: 1505– 1510.

Rochford C, Connolly M. & Drennan J. (2009) Paid part-time employment and academic performance

of undergraduate nursing students. Nurse Educ Today, 29(6): 601- 606.

Segrin C. & Burke TJ. (2015) Loneliness and sleep quality: dyadic effects and stress effects. Behav Sleep Med, 13(3): 241- 254.

Sehgal A. & Mignot E. (2011) Genetics of sleep and sleep disorders. Cell, 146(2): 194-207.

Silva M, Chaves C, Duarte J, Amaral O. & Ferreira M. (2016) Sleep quality determinants among nursing students. Procedia - Social and Behavioral Sciences, 217: 999- 1007.

Silva RM, Costa ALS, Mussi FC, Lopes VC, Batista KM. & Santos OP. (2019) Health alterations in nursing students after a year from admission to the undergraduate course. Rev Esc Enferm USP, 53: e03450. doi: 10.1590/s1980-220x2018008103450.

Tsai JC, Chou KR, Tsai HT, Yen YC. & Niu SF. (2019) Effects of nocturnal sleep quality on diurnal cortisol profiles and attention in nurses: A cross-sectional study. Biol Res Nurs, 21(5): 510- 518.

Uyar K, Gundogan R, Gurbuz OB & Ozcakar N. (2016) Status of fatigue and sleep quality in clinical medical students. Marmara Medical Journal, 29: 164- 169.

Ustun Y. & Cınar-Yucel S. (2011) Investigation of nurses' sleep quality. Maltepe University Journal of Nursing Science and Art, 4 (1): 29- 37. Available from: http://hemsirelik.maltepe.edu.tr/dergiler/nisan/29-38.pdf.

Yavuz-Sarı O, Uner S, Buyukakkus B, Bostancı EO, Celiksoz AH. & Budak M. (2015) Sleep quality and some factors affecting sleep quality in the students living in the residence hall of a university. TAF Prev Med Bull, 14 (2): 93- 100.

Yılmaz D, Tanrıkulu F. & Dikmen Y. (2017) Research on sleep quality and the factors affecting the sleep quality of the nursing students. Curr Health Sci J, 43: 20- 24.

Zhang Y, Chernaik M. & Hallet K. (2017) Relationship issues among college nursing students: Associations with stress, coping, sleep, and mental disorders. Teaching and Learning in Nursing, 12: 246- 252.

Zhang Y, Peters A. & Bradstreet J. (2018) Relationships among sleep quality, coping styles, and depressive symptoms among college nursing students: A multiple mediator model. J Prof Nurs, 34(4): 320- 325.