

Evaluation of sleep quality and perceived stress of nursing students who are engaged in clinical practice based on their sleeping habits

Makbule Tokur Kesgin[✉], Songül Çağlar[✉]

Department of Nursing, Public Health Nursing, Bolu Abant İzzet Baysal University, Faculty of Health Sciences, Bolu, Turkey

ABSTRACT

Objectives: Sleep quality and perceived stress of nursing students affects both their personal health and nursing care. The aim of this study is to identify nursing students' sleep quality and perceived stress and the sleeping habits affecting them.

Methods: This descriptive cross-sectional study was carried out with 446 nursing students. The data were collected through a questionnaire involving some questions aiming to identify sleeping habits and perceived stress, Pittsburgh Sleep Quality Index (PSQI) and Perceived Stress Scale for Nursing Students (PSSNS).

Results: The average score of PSQI was 7.71 ± 3.27 while scale of PSSNS was 63.50 ± 26.65 . According to PSSNS, female students perceived stress level more than males ($p = 0.005$). However, there was no statistically significant difference between female students and male students in terms of total PSQI scores ($p = 0.113$). Students with poor sleeping quality showed some signs of sleep deprivation during the day. There was a weak relationship between sleeping quality and perceived stress ($p = 0.01$). Nevertheless, delaying sleep due to academic workload affects students' perceived stress.

Conclusions: Nursing students should be encouraged to develop healthy sleeping habits and skills to deal with stress.

Keywords: nursing student, perceived, sleep quality, stress

Sleep plays a significant part in terms of health at every stage of life. Significant bodily functions and brain activities take place during sleep [1]. Adolescence can be considered the phase in which sleeping routines are changed the most in human life [2]. Sleeping durations in adolescence and in adulthood are different [1]. In adolescence, the intensity of academic life, increased social activities, and age-related traits may result in sleeping/waking up late and daytime sleepiness [3].

University students are also among the risk groups who suffer from sleeping disorders [4]. They have an

irregular sleep hygiene. Their time for going to bed and waking up, and sleeping periods are different on weekdays and weekends [5]. Various personal and environmental factors affect sleeping habits. Among such factors, anxiety and stress are known to cause sleeping problems [6]. It is very hard to avoid stress in academic life [7]. Students may be under stress due to in-class presentations, midterm and final exams [8]. As the academic level of students increases, the way they perceive stress and the intensity of the stress change as well. Having stress may ruin students' sleeping quality after a while [9, 10].

Received: January 4, 2019; Accepted: October 6, 2019; Published Online: February 24, 2020



How to cite this article: Tokur Kesgin M, Çağlar S. Evaluation of sleep quality and perceived stress of nursing students who are engaged in clinical practice based on their sleeping habits. Eur Res J 2020;6(5):429-437. DOI: 10.18621/eurj.508165

Address for correspondence: Songül Çağlar, Msc., Bolu Abant İzzet Baysal University, Faculty of Health Sciences, Public Health Nursing Department of Nursing, 14230 Gölköy, Bolu, Turkey. E-mail: songulcaglar@ibu.edu.tr; Tel: +90 374 2534520, Fax: +90 374 2534557

©Copyright 2020 by The Association of Health Research & Strategy
Available at <http://dergipark.org.tr/eurj>

Nursing students and other university students are exposed to similar stressors [11]. However, different from other students, nursing students go through an intense and exhausting nursing education program. Such programs provide theoretical and practical classes together [3]. In clinical practices, one can be exposed to intense stressors which have a lot of physical and psychological effects [12]. Lack of confidence and fear of making a mistake during clinical practices, approaches of instructors and clinical nurses, attitudes of patients and reports that are issued after the clinical practice cause students to experience stress [13-15]. Such intense and exhausting education process may also cause students to sleep less [3, 14].

Recent studies show that stress caused by clinical practices leads to various physiological diseases and sleeping disorders in nursing students. However, among studies conducted with nursing students, there is a small number of studies evaluating sleep and stress together. Examining the issue in detail will facilitate a) identification of the stressors affecting sleep quality of students and b) development of strategies to reduce such stressors.

The aim of the study is to answer the following questions: (1) How is the sleeping quality of nursing students? (2) How do the students engaging in clinical practice perceive stress and what types of stress do they perceive? and (3) What is the effect of students' sleeping quality and perceived stress on their sleeping habits?

METHODS

Design and sample of the study

This is a descriptive cross-sectional study. The population of this study consists of second, third and fourth grade students studying at a nursing school and performing clinical practice (n = 482). First grade students are excluded from the study since they have not engaged in clinical practice yet. The study was conducted with the participation of 446 voluntary students.

Data collection tools and implementation

The study was implemented in classrooms between December 2017-January 2018 in the fall term. The data were collected through a data collection

form developed based on a literature review, Pittsburgh Sleep Quality Index (PSQI) and Perceived Stress Scale for Nursing Students (PSSNS). The aim of the study was explained to the students before the implementation. The questionnaires were distributed to the students who accepted participating in the study. The students were given time until they completed the questionnaires.

Student Information Form

This form consists of two parts. The first part includes socio-demographic questions regarding the age, gender, grade, school success, number of siblings, education level of mother and father of the student whereas the second part consists of questions that were created based on a literature review and are about the factors which are thought to affect sleeping habits [3, 6, 16].

Pittsburgh Sleep Quality Index (PSQI)

It is an index developed by Buysse *et al.* [17] in 1989. It provides a quantitative measure of sleep quality to define good and poor sleep and consists of 24 questions 19 of which are self-assessment questions and 5 of which are answered by the partner or a roommate of the person. The questions which were answered by the partner or a roommate were not included in the calculation of the index score. Each item was evaluated with a score between 0-3. A study was carried out by Ağargün *et al.* [18] in 1999 to identify the validity and reliability of the index in the Turkish culture and the Cronbach's alpha value was found to be 0.79. One can get a total score ranging between 0-21 from the index which has 7 sub-dimensions. 0-5 refers to "good" sleep quality while a score above 5 means "poor" sleep quality. The Cronbach's alpha value of the index in this study was found to be 0.80.

Perceived Stress Scale for Nursing Students (PSSNS)

This scale was developed by Sheu *et al.* [19] in 2002 and adapted into Turkish by Karaca *et al.* [20]. The scale is consisting of 29 items and 6 sub-dimensions. Total score is 0-116 (total scores of sub-dimensions: 12, 32, 20, 24, 12, 16). High score means higher stress levels. The Cronbach's alpha value of the index in this study was found to be 0.90.

Ethical Statement

The study was reviewed and approved by Human Studies Ethics Commission (No: 2017/315). Then, necessary written approvals were obtained from the institution where this study was to be conducted. Before the distribution of the questionnaires, the participants were reminded that it is a voluntary participation and the answers will be kept confidential.

Statistical Analysis

First, the number and distribution of the missing data within the variables were identified in the analysis. Missing data were excluded from the data set for nonrandomly distributed variables ($p < 0.5$). As to the randomly distributed variables, the averages were calculated and the analysis was performed ($p > 0.5$). 15 questionnaires were not included in the evaluation. Thus, analyses were performed on a total of 431 questionnaires. In interpreting the demographic data, number and percentage distribution was used for categorical variables and arithmetic mean and standard deviation was used for continuous data. The analysis was performed at 4 stages. First, the scale scores were calculated with demographic variables and skewness and kurtosis values ± 2.5 were taken as reference for normal distribution. Then, scale sub-scores were calculated. At the third stage, perceived stress levels and sleep quality of students were compared based on their gender through independent samples t- test. At the fourth stage, sleep quality of students were examined according to various sleeping habits through chi-squared test. Then, perceived stress score of students and their habit of delaying sleep due to academic reasons were compared through the independent samples t-test. Finally, the relation between PSQI and PSSNS scores was compared through Pearson correlation. Statistical significance was calculated to be $p < 0.05$ in all of the analyses.

RESULTS

The analyses were performed on the questionnaires filled out by 431 students who participated in the study (women: 349, man: 82). The average of age of the participants was 21 ± 0.12 yeras. Distribution of participants by their grade was close to each other. 127 (29.5%), 136 (31.6%) and 168 (39.0%) students from second, third and fourth grades participated in the study respectively.

The score averages of PSQI was determined to be min 1 and max 19. The average PSQI score was found to be 7.59 ± 3.22 for women and 8.23 ± 3.42 for men. It is obvious that students' general sleep quality was poor. Perceived stress scores of students ranged between minimum 0 and maximum 116 which were 64.04 ± 27.41 for women and 56.91 ± 22.10 for men, respectively (Table 1).

The highest score was observed to be at the "sleep duration" sub-dimension in the PSQI (6.37 ± 1.81). In PSSNS, on the other hand, sub-dimensions of "stress caused by instructors and nurses" (14.42 ± 6.04) and "stress experienced while caring for patients" (16.57 ± 7.97) had higher scores compared to other sub-dimensions (Table 2).

PSSNS scores of women (65.04 ± 27.41) were found significantly higher than the average value of perceived stress level of men (56.91 ± 22.10) [$t(2.504): 145.696, p = 0.005$]. However, there was no statistically significant difference between women and men in terms of total PSQI scores [$t(-1.586): 117.011, p = 0.113$] (Table 3).

There was a weak positive relationship between waking up as rested in the morning ($p = 0.001$ phi cramer's $v = 0.369$), feeling sleepy/tired during the day ($p = 0.001$, Phi Cramer's $v = 0.256$) and sleep quality. There was a weak negative relationship between having sleeping problems in ($p = 0.001$, Phi Pramer's

Table 1. Distribution of PSQI and PSSNS scores by gender

Gender	PSQI Scores		PSSNS scores	
	Mean \pm SD	Min.- Max.	Mean \pm SD	Min.- Max.
Women (n = 349)	7.59 \pm 3.22	1-7	65.04 \pm 27.41	0-116
Men (n = 82)	8.23 \pm 3.42	1-19	56.91 \pm 22.10	0-107
Total (n= 431)	7.71 \pm 3.27	1-19	63.50 \pm 26.65	0-116

PSQI = Pittsburgh Sleep Quality Index, PSSNS = Perceived Stress Scale for Nursing Students

Table 2. Average scores of sub-dimensions of PSQI and PSSNS

Total PSQI Score and Average Scores of Sub-components		Total PSSNS Score and Average Scores of Sub-components	
PSQI Sub-dimensions	Mean ± SD	PSSNS Sub-dimensions	Mean ± SD
Subjective Sleep Quality	1.67 ± 0.71	Stress caused by lack of occupational knowledge and skills	6.02 ± 3.51
Sleep Onset Latency	1.52 ± 0.88	Stress during patient care	16.57 ± 7.97
Sleep duration	6.37 ± 1.81	Stress caused by homework and workload	12.07 ± 5.02
Accustomed Sleep Efficiency	0.39 ± 0.83	Stress caused by instructors and nurses	14.42 ± 6.04
Sleep Disorder	1.41 ± 0.59	Stress caused by environment	6.77 ± 3.05
Usage of Sleeping Pills	0.15 ± 0.52	Stress caused by peers and daily life	8.10 ± 4.54
Daytime Dysfunction	1.62 ± 0.90		
PSQI total	7.71 ± 3.27	PSSNS total	63.50 ± 26.65

PSQI = Pittsburgh Sleep Quality Index, PSSNS = Perceived Stress Scale for Nursing Students

Table 3. Comparison between PSSNS scores and PSQI scores of students

Variable	Women	Men	t*	Test df	p value
	Mean ± SD	Mean ± SD			
Total PSSNS score	65.04 ± 27.41	56.91 ± 22.10	2.501	145.696	0.005
Total PSQI score	7.59 ± 3.22	8.23 ± 3.42	-1.586	117.011	0.113

PSQI = Pittsburgh Sleep Quality Index, PSSNS = Perceived Stress Scale for Nursing Students

*Independent samples t-test

$v = -0.346$) and out of the school ($p = 0.013$, Phi Cramer's $v = -0.119$) and sleep quality. Students with a poor sleep quality did not wake up as rested in the morning and had sleep problems in and out of the school. Also, students who sleep quality was poor, feeled sleepy and tired during the day (Table 4).

A significant relationship was found between the effect of school-related efforts and using PC/tablet on delayed sleep and PSSNS scores ($p < 0.05$). PSSNS scores of the students who delay sleeping because of their homework (67.90 ± 28.58) was significantly higher than those who did not (59.94 ± 26.11) [$t(2.874):355.58, p = 0.004$]. Average PSSNS scores of the students who delay sleeping to do homework (72.72 ± 82.40) and play games on a notebook computer (68.87 ± 27.90) were higher, which was

statistically significant [$t(4.151):270.91, p = 0.001$ and $t(2.846):424.60, p = 0.005$] (Table 5).

The relationship between students' PSSNS scores and PSQI scores was examined. There was a weak relationship between their PSSNS scores and PSQI scores ($R:0.195, p = 0.01$) (Fig. 1).

DISCUSSION

This study presents important findings regarding students' sleep quality and perceived stress. In the study, the average PSQI score used to evaluate the sleep quality was found to be higher than 7 for both female and male students. The index score in other studies which used PSQI ranged between 4.65 and

Table 4. Evaluation of the sleep quality of students identified through PSQI based on various sleeping habits

		Good sleep quality	Poor sleep quality	x ^{2*}	Test	
					Phi, Cramer's V	p value
Waking up rested in the morning	Yes	52	33	58.562	0.369	0.001
	No	68	278			
Not having sleeping problem at school	Yes	75	284	51.681	-0.346	0.013
	No	45	27			
Not having sleeping problem out of the school	Yes	95	275	6.108	-0.119	0.001
	No	25	36			
Feeling sleepy and tired during the day	Yes	80	275	28.223	0.256	0.013
	No	40	80			

PSQI = Pittsburgh Sleep Quality Index

*Chi-squared test

Table 5. The relationship between delayed sleep due to students' school-related activities and PC/Tablet use for fun and the PSSNS score

		PSSNS scores		t*	Test	
		n	Mean ± SD		df	p value
School-related activities						
Before exam	Delaying sleep	342	65.44 ± 27.68	0.706	128.85	0.482
	Not delaying sleep	84	63.01 ± 28.96			
While doing daily homework	Delaying sleep	143	72.72 ± 28.40	4.151	270.91	0.001
	Not delaying sleep	286	61.06 ± 26.91			
While doing homework	Delaying sleep	270	67.90 ± 28.58	2.874	355.58	0.004
	Not delaying sleep	159	59.94 ± 26.11			
Notebook computer use for entertainment						
While using a notebook computer	Delaying sleep	208	68.87 ± 27.90	2.846	424.60	0.005
	Not delaying sleep	221	61.25 ± 27.50			

PSSNS = Perceived Stress Scale for Nursing Students

*Independent samples t-test

20.08 [21-25]. As other studies, the results of this study also revealed that most of the nursing students have a poor sleep quality [3, 12, 14, 21, 24, 26].

Nurses who are healthy and have the required practice knowledge/skills are the essence of a health

care of good quality. Nurses who do not meet their basic needs such as sleep might have troubles in both the patient care and personal care. Poor sleep quality brings about various problems. Previous studies revealed that poor sleep quality causes depression and

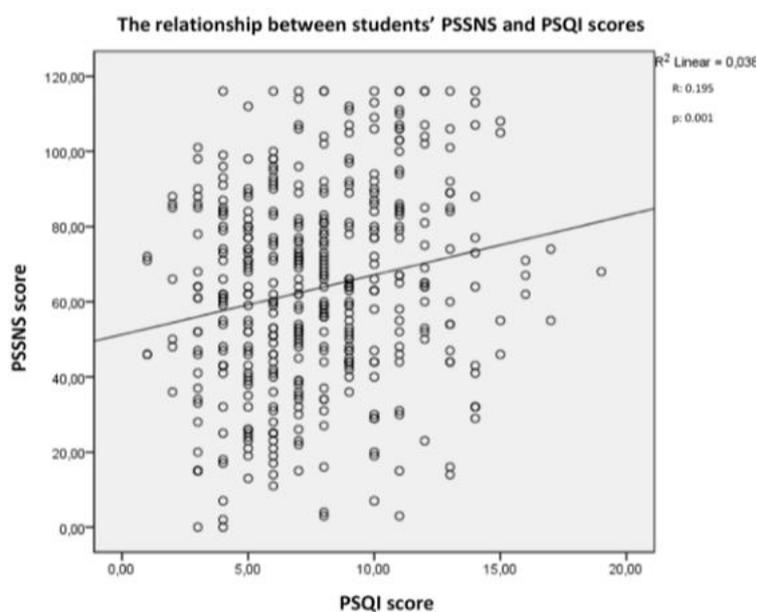


Fig. 1. The relationship between students' PSSNS and PSQI scores.

affects nursing students' mental health negatively [6, 11]. In addition, school life and practices of a student having a poor sleep quality are also affected. Another important finding of the study was that students whose sleep quality was poor did not wake up rested in the morning and were sleepy during the day both in and out of the school. This situation may lead to fatigue and attention deficit in students and negatively affect their both academic and social life [27]. As a matter of fact, there is a risk for these students of attaining lower academic success compared to their peers, making mistakes in clinical practices and having occupational accidents. If suffering from lack of sleep becomes constant, students may encounter many problems in the future as to the patient care, communicating with colleagues, and medical mistakes. Thus, before starting their professional life, students should attain a healthy sleep routine for both their career and health.

Various research on the sleeping habits of students revealed that there are several reasons to their poor sleep quality. One these reasons is the students' experienced and perceived stress [6, 11, 25, 27, 28]. Studies suggest that majority of students experience stress [12, 29-31], which affects nursing students' sleep quality and performance in clinical practices. Occupational practices, learning environment, educators, nurses and patient-related factors may play a part in the stress experienced by students. In this

study, students' perceived stress scores were found to be average as in the study carried out by Labrauge *et al.* [32] and it was revealed that students did not experience an intense stress. However, the literature suggests that students are under a lot of stress [30, 31, 33]. Students' perceived stress sub-scores varied by studies. Some studies revealed that homework and workload are the main causes of stress for students [32, 34]. This study, on the other hand, was highly consistent with the study carried out by Al-Gamal *et al.* [35]. In both studies, the sub-dimensions "stress experienced in patient care", "stress caused by instructors and nurses" and "stress caused by homework and workload" had the highest scores. Differences regarding the stressors identified in these studies were thought to stem from the difference in the curricula of nurse education adopted by countries and the cultural differences. As a matter of fact, another study which was carried out in Turkey showed that instructors and nurses were the primary stressors for students [36] because their expectations of students were either not explicit [37, 39] or high and they were judgmental when communicating with students [39].

In a study carried out to identify the stressors affecting students' sleep quality, the students who had a poor sleep quality, had troubles in vocational education and failed to properly manage their time were found to have a higher stress level [40]. In a study carried out by Labrauge (2018), lack of

occupational knowledge and skills was shown to be one of the fundamental stressors [41]. In this study, that students who cannot manage their time properly due to the duration of study and notebook computer use would have a higher level of stress was an expected finding. However, since it was not always the case, it did not have a large effect on sleep quality.

It is known that stress varies by gender in youth [29, 42]. Women are more emotionally sensitive than men. Thus, they perceive and react to stress more intensely than men do. Previous studies had proved that this was also the case in the field of nursing [23,29]. The findings of this study put forth the same fact and showed that female students were more stressful than males. Although males have been increasingly represented in nursing, it is still a female-dominated occupation [34, 43]. Another reason why female nursing students perceive stress more than males is that the profound interaction and experience sharing taking place among women in the clinical environment. Students want to be supported during clinical practices. However, due to the high number of students, they cannot get sufficient support from their instructors. Thus, they become inclined to expect to be supported by clinical nurses with whom students may sometimes have various problems [38]. Students share the problems they had with a medical personnel at the clinic with their friends or relatives rather than talking to the relevant person to settle the dispute. This experience sharing process further increases students' stress [37, 44]. As the stress level increases, the likelihood for nursing students to deliver a poor performance in clinical practices increases also [12]. In addition, a student whose sleep quality is poor is likely to respond to the busy pace of the clinic in a more nervous and stressful manner. The retardation in cognitive processes caused by lack of sleep may lead to misunderstanding doctors' request, losing time and making errors in the practices requiring skills, and thus experiencing stress in the patient care and communication with clinical nurses [29, 45]. This study suggests that although the relationship between the sleep quality and the perceived stress of nursing students is weak, it is still statistically significant. A similar result was obtained through a study conducted with psychology students, which suggests that 15% of poor sleep quality can be explained by the perceived stress of students [46]. Although this rate is not very

high it is still indicative of the fact that to improve their sleep quality, students need to be prevented from experiencing stress. This is not only necessary for the protection of students' personal health but also for the improvement of the quality of nursing practices and for a healthy communication between medical personnel at the clinic.

Limitations

One of the limitations to this study is the evaluation of students' sleep quality based on their perceived stress. The other factors (cigarette/alcohol consumption, internet/social media addiction, etc.) that may affect the sleep quality was not taken into consideration. Another limitation is that first grade nursing students were not included in this study since they did not engage in clinical practice yet. Future studies may include first grade students who do not engage in clinical practice and evaluate the relationship of the sleep problems with the clinical practice.

CONCLUSION

This study, which was conducted in order to evaluate the sleeping quality and perceived stress of the nursing students based on their sleeping habits, revealed that the sleep quality of nursing students is very poor. Students' poor sleep quality causes them to have sleep problems in classes during the day. There was not a strong relationship between students' sleep quality and perceived stress. However, it can be said that both can be affected by some of the sleeping habits of the students. Future studies having a larger sample size and adopting different research designs (qualitative research, experimental research, etc.) can provide a more in-depth examination of the students' stress and sleep.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

Financing

The authors disclosed that they did not receive any grant during conduction or writing of this study.

REFERENCES

1. Contente X, Pérez A, Espelt A, López MJ. Media devices, family relationships and sleep patterns among adolescents in an urban area. *Sleep Med* 2017;32:28-35.
2. Pıçak R, İsmailoğulları S, Mazıcıoğlu MM, Üstünbaş HB, Aksu M. [Approach to sleep disorders and recommendations in primary care]. *TJFMPC* 2010;4:12-22. [Article in Turkish]
3. Demir G. Daytime sleepiness and related factors in nursing students. *Nurse Educ Today* 2017;59:21-5.
4. Yazdi Z, Loukzadeh Z, Moghaddam P, Jalilolghadr S. Sleep hygiene practices and their relation to sleep quality in medical students of Qazvin University of Medical Sciences. *J Caring Sci* 2016;5:153-60.
5. Silva M, Chaves C, Duarte J. Sleep quality determinants among nursing students. *Soc Behav Sci* 2016;217:999-1007.
6. Gunes Z, Arslantas H. Insomnia in nursing students and related factors: a cross-sectional study. *Int J Nurs Pract* 2017;23:e12578.
7. Stecker T. Well-being in an academic environment. *Med Educ* 2004;38:465-478.
8. Thamby Sam A, Muttusamy B, Mun Yee S, Ayapanaido T, Parasuraman S. Investigation of stressors affecting a sample of pharmacy students and the coping strategies employed using modified academic stressors scale and brief cope scale: a prospective study. *J Young Pharm* 2016;8:122-7.
9. Waqas A, Kahn S, Sharif W, Khalid U, Ali A. Association of academic stress with sleeping difficulties in medical students of a Pakistani medical school: a cross sectional survey. *Peer J* 2015;12:e840.
10. Ahrberg K, Dresler M, Niedermaier S, Steiger A, Genzel L. The interaction between sleep quality and academic performance. *J Psychiatr Res* 2012;46:1618-22.
11. Zhang Y, Peters A, Bradstreet J. Relationships among sleep quality, coping styles, and depressive symptoms among college nursing students: a multiple mediator model. *J Prof Nurs* 2018;34:320-5.
12. Ye Y, Hu R, Ni Z, Jiang N, Jiang X. Effects of perceived stress and professional values on clinical performance in practice nursing students: a structural equation modeling approach. *Nurse Educ Today* 2018;71:157-62.
13. Yamashita K, Saito M, Takao T. Stress and coping styles in Japanese nursing students. *Int J Nurs Pract* 2012;18:489-96.
14. Khalil A. Sleep pattern disturbance among undergraduate nursing students and the association with their academic performance. *Int J Health Wellness Soc* 2017;7:1-17.
15. Yılmaz M, Yaman Z, Erdoğan S. [Stressful situation in nursing students and the methods of coping with stress]. *Mersin Univ Sağlık Bilim Derg* 2017;10:88-99. [Article in Turkish]
16. Adriansen RC, Childers A, Tessa Y, Abraham S. Sleeping habits and perception of its health effects among college students. *Int J Studies Nurs* 2017;2:28.
17. Buysse DJ, Reynolds DC 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. *Psychiatry Res* 1989;28:193-213.
18. Ağargün, MY, Kara H, Anlar Ö. [The validity and reliability of the Pittsburgh sleep quality index]. *Türk Psikiyatri Arşivi* 1996;7(2). [Article in Turkish]
19. Sheu S, Lin HS, Hwang SL. Perceived stress and physio-psycho-social status of nursing students during their initial period of clinical practice: the effect of coping behaviors. *Int J Nurs Studies* 2002;39:165-75.
20. Karaca A, Yıldırım N, Ankaralı H, Açıkgöz F, Akkuş D. [Turkish adaptation of perceived stress scale, bio-psycho-social response, and coping behaviours of stress scales for nursing students]. *Psikiyatri Hemşireliği Dergisi* 2015;6(1):15-25. [Article in Turkish]
21. Alkaya SA, Okuyan CB. [The exercise behaviors and sleep quality of nursing students]. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi* 2017;10:236-41. [Article in Turkish]
22. Menon B, Karishma HP, Mamatha IV. Sleep quality and health complaints among nursing students. *Ann Indian Acad Neurol* 2015;18:363-4.
23. Najafi Kalyani M, Jamshidi N, Salami J, Pourjam E. Investigation of the relationship between psychological variables and sleep quality in students of medical sciences. *Depress Res Treat* 2017;7143547.
24. Sadoughi M, Mohammad-Salehi Z. The relationship between problematic mobile use and sleep quality among nursing students: the mediating role of perceived stress. *Adv Nurs Midwifery* 2017;27:15-20.
25. Karatay G, Gürarlan Baş N, Aldemir H, Akay M. [Examining the sleep habits of nursing department students and the affective factors]. *HSP* 2016;3:16-22. [Article in Turkish]
26. Santos TCMM, Martino MMFD, Sonati JG, Faria ALD, Nascimento EFA. Sleep quality and chronotype of nursing students. *Acta Paul Enferm* 2016;29:658-63.
27. Silva M, Chaves C, Duarte J, Amaral O, Ferreira M. Sleep quality determinants among nursing students *Procedia Soc Behav Sci* 2016;217:999-1007.
28. Tada A. The associations among psychological distress, coping style, and health habits in Japanese nursing students: a cross-sectional study. *Int J Environ Res Public Health* 2017;14:1434.
29. Suarez-Garcia JM, Maestro-Gonzalez A, Zuazua-Rico D, Sanchez-Zaballos M, Moesteiro-Diaz MP. Stressors for Spanish nursing students in clinical practice. *Nurse Educ Today* 2018;64:16-20.
30. He FX, Turnbull B, Kirshbaum MN, Philips B, Klainin-Yobas P. Assessing stress, protective factors and psychological well-being among undergraduate nursing students. *Nurse Educ Today* 2018;68:4-12.
31. Gurkova E, Zelenikova R. Nursing students' perceived stress, coping strategies, health and supervisory approaches in clinical practice: a Slovak and Czech perspective. *Nurse Educ Today* 2018;65:4-10.
32. Labrague LJ, McEnroe-Peitte DM, Papathanasiou IV, Edet OB, Tsaras K, LEocadio MC, et al. Stress and coping strategies among nursing students: an international study. *J Ment Health* 2018;27:402-8.
33. Dugue M, Garnarczyk C, Dosseville F. [Psychological characteristics of stress in nursing student]. *Rev Epidemiol Sante*

Publique 2018;66:347-54. [Article in French]

34. Labrague LJ. Stress, stressors, and stress responses of student nurses in a government nursing school. *Health Sci J* 2013;7:424-35.

35. Al-Gamal E, Alhosain A, Alsunaye K. Stress and coping strategies among Saudi nursing students during clinical education. *Perspect Psychiatr Care* 2018;54:198-205.

36. Ergin E, Çevik K, Pakiş-Çetin S. [Investigation of nursing students' perception of stress and coping behaviours of stress regarding education]. *HEAD* 2018;15:16-22. [Article in Turkish]

37. O'Mara L, McDonald J, Gillespie M, Brown H, Miles L. Challenging clinical learning environments: experiences of undergraduate nursing students. *Nurse Educ Pract* 2014;14:208-13.

38. Kesgin MT, Bilgin NÇ, Ayhan F. [Opinions of nursing students about clinical practice: general practice course]. *Soc Sci Studies J* 2018;4:3805-16. [Article in Turkish]

39. Bahçecioglu Turan G, Tan M, Dayapoğlu N. [Determining the opinions of clinic nurses and nursing students about internship]. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi* 2017;20:170-9. [Article in Turkish]

40. Benavente SB, Silva RM, Hıqashi AB, Guido Lde A, Costa A. Influence of stress factors and socio-demographic characteristics on the sleep quality of nursing students. *Rev Esc*

Enferm USP 2014;48:514-20.

41. Labrague LJ, McEnroe-Petit DM, De Los Santos JAA, Edet OB. Examining stress perceptions and coping strategies among Saudi nursing students: A systematic review. *Nurse Educ Today* 2018;65:192-200.

42. Karaca A, Yıldırım N, Ankaralı H, Açıkgöz F, Akkuş D. [Nursing students' perceived levels of clinical stress, stress responses and coping behaviors]. *Psikiyatri Hemşireliği Dergisi* 2017;8:32-9. [Article in Turkish]

43. Soares de Souza V, Costa MAR, Rodrigues AC, Bevilacqua JF, Inoue KC, Oliveria JLC, et al. Stress among nursing undergraduate students of a Brazilian public university. *Invest Educ Enferm* 2016;34:518-27.

44. Bazrafkan L, Kalyani MN. Nursing students' experiences of clinical education: a qualitative study. *Invest Educ Enferm* 2018;36:e04.

45. Bartlett ML, Taylor H, Nelson JD. Comparison of mental health characteristics and stress between baccalaureate nursing students and non-nursing students. *J Nurs Educ* 2016;55:87-90.

46. Doolin J, Vilches JE, Cooper C, Gipson C, Sorensen W. Perceived stress and worldview influence sleep quality in Bolivian and United States university students. *Sleep Health* 2018;4:565-71.



This is an open access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.