La Medicina del Lavoro

Original Article

Med Lav 2024; 115 (4): e2024026
DOI: 10.23749/mdl.v115i4.15685

Examining the Effect of Sleep Hygiene Education Given to Nursing Students on Sleep Quality

Çiğdem Müge Hayli[1,*], Seockhoon Chung[2], Mehmet Zeki Avci[3], Dilek Demir Kösem[4]

[*1]Hakkari University, Faculty of Health Sciences, Department of Nursing, Hakkari, Turkey
[2]Asan Medical Center, University of Ulsan, Faculty of Medicine, Department of Psychiatry, Seoul, Korea
[3] Dean of Cyprus Science University Faculty of Health Sciences, Kyrenia, TRNC
[4]Hakkari University, Faculty of Health Sciences, Department Of Nursing, Hakkari, Turkey

Keywords: Nursing Students; Sleep; Quality; Sleep Hygiene Education

ABSTRACT

Background: *The study aimed to ascertain the effect of sleep hygiene training on nursing students' sleep quality.* **Methods:** *The research study group consisted of 80 nursing students studying in the nursing department. A quasi-experimental model with a pretest-posttest control group was used. Sleep hygiene training was given to nursing students in the experimental group. The sociodemographic data form for nurse students and the Pittsburg Sleep Quality Index (PSQI) were used to collect data. The t-test for independent groups was used to compare the PSQI pre-test and post-test scores of the experimental and control groups, and the dependent group t-test was used to compare the PSQI pre-test and post-test scores within groups.* **Results:** *There was a difference in the sleep-related data of the nursing students in the experimental and control groups and between the PSQI pretest and posttest score averages according to the groups. No significant difference between the pre-test and post-test mean scores was observed in the control group for subjective sleep quality, sleep duration, sleep disturbance, and daytime dysfunction.* **Conclusions:** *Sleep hygiene education helps nursing students develop regular sleep behaviors.*

1. Introduction

Human beings are whole with their physical, social, intellectual, and spiritual needs. A balanced approach to meeting these requirements is necessary for an individual to be healthy. "Sleep" is one of the fundamental human needs that must be satisfied [1, 2]. Sleep is a significant health variable affecting the individual quality of life and well-being [3, 4]. Some factors affecting sleep quality are drugs, diseases, habits, and psychological and social aspects. Today, sleep quality is a concept that is emphasized in clinical practices and sleep-related research. The reasons for this are that sleep-related complaints are pretty common, poor sleep quality can be a symptom of many medical diseases, and a strong relationship exists between sleep health and physical and psychological well-being [5]. It is seen that studies on sleep disorders are increasing rapidly all over the world [6]. Although it varies according to societies and age groups, the rate of sleep disorders varies between 5% and 71%. A study conducted in Turkey reported that 21.8% of the Turkish population had a deterioration in sleep quality, 34% had difficulty falling asleep and had early waking problems [7]. When looking at the issue of sleep in university students, there is a general belief that university students sleep inadequately [8]. The amount and quality of college

Received 13.03.2024 – Accepted 10.07.2024
*Corresponding Author: Çigdem Müge Hayli; e-mail: mugehayli@hakkari.edu.tr

student sleep have changed significantly in the last few decades; from 1969 to 2001, the average sleep time reported by college students decreased from 7.75 hours to 6.65 hours, and sleep disturbances increased from 24% to 71% between 1978 and 2001 [9]. In the study of Liu, Zhao, Jia, and Buysse (2008) [10], it was found that there was a relationship between sleep quality and psychological health, and university students with poor sleep quality had more psychological health problems. Likewise, the study of Keshavarz Akhlaghi and Ghalebandi (2009) [5] reported a relationship between sleep quality and the general health status of university students.

In our country, hardly much research has been done on the sleeping habits of college students. In the study of Altıntaş et al. (2006) [6], sleepiness was examined in medical faculty students, and it was found that 54.4% of the students thought they had sleep-related problems. Since the training programs in health professions such as medicine, nursing, and pharmacy are intense and tiring, students can sacrifice their sleep time (Mayda et al., 2012) [11]. Therefore, students who do not get enough sleep are negatively affected physically, cognitively, and emotionally. Insomnia is also reported to negatively impact students' academic success (Curcio, Ferrara, & Gennaro, 2004) [12]. It is crucial for professional members who provide health services to the public to be in complete physical and mental well-being and to maintain this state of well-being. For this purpose, it will be helpful to determine the current situation and examine the factors that affect it positively or negatively to ensure adequate and quality sleep, among the parameters of a healthy lifestyle. The ability of students to develop a healthy lifestyle, each of whom will be a member of a profession that provides health services to society and even cares for sick/healthy individuals during their student life, will also be reflected in the individuals and society they serve and serve as role models.

One of the critical factors in maintaining sleep health is sleep hygiene. Sleep hygiene is defined as performing activities that facilitate sleep (maintaining regular sleep routines) and avoiding behaviors that hurt sleep (watching movies, encouraging talking, taking caffeine-containing foods, etc.) (Odabaşıoğlu et al., 2017) [13]. Sleep hygiene training is a practice that increases the nature and quality of sleep (Geiger et al., 2015) [14]. It is essential in preventing problems arising from sleep problems and disorders (Güneş, 2018) [15].

Examining the sleep quality of nursing students will contribute to determining the adequate and quality sleep status of the students in this department and the affecting factors. It will also create a database for studies on improving students' sleep quality. The aim of this study was to find out how sleep hygiene instruction affected nursing students' sleep quality.

2. Methods

It was collected from Cyprus Science University, Faculty of Health Sciences, Department of Nursing students. It was completed with 80 people between 17.06.2023 and 05.11.2023, including 40 people in the experimental group who received training and 40 in the control group who did not. Criteria for sample inclusion and exclusion are presented below.

2.1. Sampling Inclusion Criteria

2.1.1. Inclusion Criteria

- Students who agree to participate in the research voluntarily.
- Students studying in the nursing department.
- Having completed the informed consent form.

2.1.2. Exclusion Criteria

- Students who do not agree to participate in the research voluntarily.
- Students outside the nursing department
- Not having completed the informed consent form.

2.2. Research Hypotheses

2.2.1. Hypothesis 1- H_1

The pre-test-post-test PSQI score averages of the nursing students in the experimental group who

received sleep hygiene training before and after the training differed.

2.2.2. Hypothesis 2- H_2

There is no difference between the PSQI score averages of Nursing Students in the Control Group before and after training.

2.3. Collection of Data

- The forms below were used to collect research data.
- Sociodemographic Data Collection Form.
- Pittsburg Sleep Quality Index (PSQI).

2.3.1 Socio-Demographic Data Collection Form

This form consists of 3 questions about the nursing students' gender, age, and class status.

2.3.2 Pittsburg Sleep Quality Index (PSQI)

PSQI was developed by Buysse et al. in 1989 and has been shown to have adequate internal consistency, Cronbach's alpha=0.80), test reliability and validity (Buysse et al., 1989) [16]. The validity and reliability study of PSQI in our country was conducted by Ağargün et al. (1996) [17]. In this study, the Cronbach alpha value of the scale was found to be 0.79 (Cronbach alpha=0.79). PSQI is a self-report scale that assesses sleep quality and disturbance over one month. On a scale of 24, 19 questions are answered by the person, while the last five questions are filled in by the person's roommate or bed partner. With 19 questions answered by the person, seven sub-dimensions are evaluated: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disorder, use of sleeping pills, and daytime dysfunction. These seven subscales are subjective sleep quality (component 1), sleep latency (component 2), sleep duration (component 3), habitual sleep efficiency (component 4), sleep disturbance (component 5), sleeping pill use (component 6), and daytime dysfunction (component 7). The sum of the seven component scores gives the total PSQI score. Each response is scored between 0-3 according to symptom frequency. The total score has a value between 0-21. High values indicate poor sleep quality and a high level of sleep disturbance. A score above five clinically indicates poor sleep quality (Ağargün et al., 1996) [17].

2.4. Application of Pretest

The "Sociodemographic Data Form" and Pittsburg Sleep Quality Index (PSQI) were collected during the pre-test through face-to-face interviews.

2.5. Interference

2.5.1. Preparation of Objectives and Training Content

In the first stage of the research, sleep hygiene education content/module was prepared for nursing students, considering the data obtained from focus group interviews.

2.5.2. Conducting Training

Nursing students (40 Experimental groups) were given training. The researcher conducted the training for two hours, two days a week, for eight weeks. Each session lasted approximately 30 minutes. In the research, training was given in groups of 5 people. The training started with introducing and determining meeting rules (10 minutes). A presentation on sleep hygiene education to nursing students included (20 minutes) of distribution and explanation of written educational material (10 minutes).

2.6. Application of Post-test

In the post-tests, the Pittsburg Sleep Quality Index (PSQI) was re-applied to the nursing students in the experimental and control groups.

2.7. Evaluation of Data

Before analyzing the data, the distribution of PSQI scores of the experimental and control groups was examined by applying the Kolmogorov□Smirnov normality test. The results showed that the scores had a normal distribution according to groups. In

line with this result, inter- and intra-group PSQI scores were compared using parametric analysis techniques. Within the scope of the research, an independent groups t-test was applied to compare the PSQI pre-test and post-test scores of the experimental and control groups. Dependent groups t-test was used to compare PSQI pretest and post-test scores within the groups. Cohen's d coefficients were calculated to determine the effect value. Approximately 0.20; Effect values of 0.50 and 0.80 were considered small, medium, and large effects, respectively (Cohen, 1988) [18]. Data were analyzed using the SPSS 25.0 statistical package program.

3. RESULTS

When Table 1 is analyzed, it is understood that 50% of the participants in the experimental group and 57.5% of the participants in the control group were male. A large proportion of the participants in the experimental group (52.5%) were in the 24-26 age group. In the control group, a large proportion of the participants (45%) were in the 21-23 age group. Results showed that the groups were homogenous regarding gender, age, and grade level variables.

When Table 2 was analyzed, it was determined that there was no statistically significant difference between the pre-training PSQI score averages of nursing students in the experimental and control groups ($p>0.05$).

When Table 3 is examined, it is understood that there is no significant difference between the experimental group's pre-test and post-test mean scores of sleep duration and habitual sleep activity. However, a significant difference was found between the mean pre-test scores of sleep latency, subjective sleep quality, sleep disturbance, sleep medication use, daytime dysfunction, and PSQI total. This result showed that the sleep quality of the experimental group participants generally increased after the experimental procedure.

When Table 4 is analyzed, it is understood that there is no significant difference between the control group's pre-test and post-test mean scores of subjective sleep quality, sleep duration, sleep disturbance, and daytime dysfunction. However, a

Table 1. Distribution of participants by descriptive characteristics.

		Experiment	Control		
		N (%)	N (%)	Chi square	p
Gender	Male	20 (%50)	23 (%57.5)	0.45	0.51
	Female	20 (%50)	17 (%42.5)		
Age	18-21	3 (%7.5)	6 (%15)	3.69	0.29
	21-23	13 (%32.5)	18 (%45)		
	24-26	21 (%52.5)	13 (%32.5)		
	27 and over	3 (%7.5)	3 (%7.5)		
Class Status	1	10 (%25)	11 (%27.5)	0.09	0.99
	2	7 (%17.5)	7 (%17.5)		
	3	10 (%25)	10 (%25)		
	4	13 (%32.5)	12 (%30)		

Table 2. Pre-Training PSQI Nursing Students' Scores.

	Pre-test					
Group	**Min**	**Max**	$\bar{X}$	**SS**	***t***	**p**
Experiment	5.00	17.00	11.70	2.43	1.000	0.321
Control	7.00	16.00	11.17	2.26		

Table 3. Pre-Test and Post-Test PSQI scores in the group receiving sleep hygiene training.

Group	Variable	Test	N	Mean	SD	t(39)	p	*Cohen d*
Experiment	Subjective sleep quality	Pre-test	40	0.93	1.07	4.78	<0.001	0.76
		Post-test	40	0.15	0.58			
	Sleep latency	Pre-test	40	1.70	0.69	6.98	<0.001	1.10
		Post-test	40	0.88	0.40			
	Sleep duration	Pre-test	40	0.95	1.06	0.00	1.00	0.00
		Post-test	40	0.95	1.06			
	Habitual sleep activity	Pre-test	40	1.40	1.24	-1.43	0.16	0.23
		Post-test	40	1.50	1.32			
	Sleep disturbance	Pre-test	40	1.40	0.50	7.06	<0.001	1.12
		Post-test	40	0.48	0.55			
	Use of sleeping pills	Pre-test	40	1.23	0.77	5.37	<0.001	0.85
		Post-test	40	0.38	0.49			
	Daytime dysfunction	Pre-test	40	1.15	0.62	4.42	<0.001	0.70
		Post-test	40	0.65	0.74			
	PSQI Total	Pre-test	40	8.75	3.12	7.27	<0.001	1.15
		Post-test	40	4.98	3.34			

Table 4. Pre-test and post-test PSQI scores in the control group.

Group	Variable	Test	N	Mean	SD	t(39)	p	*Cohen d*
Control	Subjective sleep quality	Pre-test	40	1.63	0.93	0.54	0.59	0.08
		Post-test	40	1.50	0.93			
	Sleep latency	Pre-test	40	1.78	0.92	-562	<0.001	0.89
		Post-test	40	2.50	0.68			
	Sleep duration	Pre-test	40	1.00	1.04	-1.78	0.08	0.28
		Post-test	40	1.08	1.07			
	Habitual sleep activity	Pre-test	40	1.88	1.20	-2.36	0.02	0.37
		Post-test	40	2.00	1.26			
	Sleep disturbance	Pre-test	40	2.55	0.50	-1.43	0.16	0.23
		Post-test	40	2.60	0.50			
	Use of sleeping pills	Pre-test	40	2.73	0.45	-2.62	0.01	0.41
		Post-test	40	2.88	0.33			
	Daytime dysfunction	Pre-test	40	2.83	0.38	-1.43	0.16	0.23
		Post-test	40	2.88	0.33			
	PSQI Total	Pre-test	40	14.38	2.32	-3.56	<0.001	0.56
		Post-test	40	15.43	2.60			

significant difference was found between the control group's mean scores on sleep latency, habitual sleep efficiency, sleep medication use, and PSQI total pre-test scores.

Mean scores of sleep duration and habitual sleep activity post-pre-test scores did not differ between the groups (Table 5). In contrast, differences were found for sleep latency, subjective sleep quality,

sleep disturbance, sleep medication use, daytime dysfunction, and PSQI pre-test mean scores. After the experimental procedure, the PSQI scores of the experimental group decreased more in general, suggesting that the experimental method effectively improved sleep quality, with a moderate and significant effect on sleep quality.

4. Discussion

Nursing students who met the inclusion criteria were included in the study, and their characteristics were analyzed. The data of nurses and students excluded from the inclusion criteria were not analyzed. It was concluded that the sociodemographic characteristics (age, gender, and class status) of the nursing students in the experimental and control groups were homogeneous. This finding is similar to the sociodemographic findings of Huang et al. (2018) [19] study titled Factors associated with teaching sleep hygiene to nursing students. The study results on factors affecting sleep quality in nursing and non-nursing students conducted by Kim and Yoon (2013) [20] are similar to our findings. The findings of Brown et al. (2002) [21] study titled are similar between the groups.

A significant difference was found between the score averages of the nursing students in the experimental group who received sleep hygiene training before and after the training. **(H_1)**. Silva et al.'s (2016) [22] study determined that their sleep quality increased due to the sleep training provided. Likewise, Revathi et al. (2016) [23] study of sleep quality positively affected sleep education and quality. In İsmailoğlu and Özdemir (2020) [24], their study, sleep education and factors affecting sleep hygiene education were determined as positive and negative determining criteria for sleep quality. The results of Yazdi et al. (2016) [25] study parallel our findings.

There was no difference between the pre-test and post-test PSQI score averages of the nursing students in the control group before and after the training **(H_2).** This finding supported the hypothesis that there is no difference between the PSQI score averages of Nursing Students in the Control Group before and after training. In Amaral et al. (2021) [26] study, it was determined that a group was not given training on sleep quality, and their sleep quality remained the same. Likewise, when Gipson et al. (2019) [27] studied, it was found that there was no change in the sleep quality of students who did not receive sleep hygiene intervention. There was a positive increase in the sleep quality of those in the intervention group. Suen et al. (2010) [28] study concluded that sleep hygiene is essential in sleep quality and that students with poor sleep hygiene have increased sleep problems. In Li et al. (2016) [10] study, it was found that the group that received sleep hygiene training had an increase in their sleep quality compared to the group that did not receive sleep hygiene training and those who did not receive sleep hygiene training. This group's low sleep quality is similar to our research findings.

In a study conducted by Hershner and Brien (2018) [29], it was concluded that the sleep quality of the group receiving sleep hygiene training was better. The study conducted by Strong et al. (2018) [30] found that the sleep quality of adolescents who received sleep hygiene interventions was better. In a different but similar study, Haylı and Aydın's (2023) [31] study also found that the sleep hygiene training applied to the experimental group positively affected their sleep quality, and there was no change in the sleep quality of the control group. It was determined that it was not. The study by Chen et al. (2010) [32] concluded that working women who received sleep hygiene training had better sleep quality and reduced sleep problems. Dietrich et al. (2016) [33] study found that university students who received sleep hygiene training had fewer sleep problems and slept comfortably and peacefully compared to groups that did not receive sleep hygiene training. Likewise, Peach et al. (2016) [34] study concluded that university students' sleep hygiene practices positively affected their sleep quality. In Brick et al. (2010) [35] study, it was found that there was a significant difference between sleep hygiene and sleep quality. The results of the study by Ali et al. (2023) are similar to our research findings [36].

5. Conclusion

Research has shown that nursing students benefit from "sleep hygiene training" to establish regular sleep habits. The study concluded that sleep hygiene

Table 5. Pre- and Post-test PSQI scores in the experimental and control groups.

Variables	Group	N	Mean	SD	t(80)	p	*Cohen d*
Subjective sleep quality	Pre-test	40	-0.78	1.03	-2.29	0.02*	0.51
	Post-test	40	-0.13	1.47			
Sleep latency	Pre-test	40	-0.83	0.75	-8.86	<0.001	1.98
	Post-test	40	0.73	0.82			
Sleep duration	Pre-test	40	0.00	0.32	-1.14	0.26	0.25
	Post-test	40	0.08	0,27			
Habitual sleep activity	Pre-test	40	0.10	0,44	-0.29	0.78	0.06
	Post-test	40	0.13	0,33			
Sleep disturbance	Pre-test	40	-0.93	0,83	-7.19	<0.001	1.61
	Post-test	40	0.05	0,22			
Use of sleeping pills	Pre-test	40	-0.85	1,00	-5.94	<0.001	1.33
	Post-test	40	0.15	0,36			
Daytime dysfunction	Pre-test	40	-0.50	0,72	-4.64	<0.001	1.04
	Post-test	40	0.05	0,22			
PSQI Total	Pre-test	40	-3.78	3,29	-8.08	<0.001	1.81
	Post-test	40	1.05	1,87			

instruction intended to enhance sleep cycles is a feasible recommendation. Regularly assessing nursing students' sleep quality is advised, as is teaching them about physiological, psychological, and environmental aspects of good sleep hygiene. Research should also be conducted to determine how well-applied training and consulting programs improve students' sleep. It should be noted that the study was conducted on volunteers. We cannot exclude the possibility of a spontaneous selection of the samples. Additionally, we cannot guarantee the validity of comparisons due to the non-random nature of the sample selection process.

Funding: Not applicable.

Institutional Review Board Statement: Permission was obtained from the Cyprus Science University Ethics Committee (IRB: 2023/11.003) for the research. The identity information of the nurses was never taken or shared. Informed consent forms were obtained from pediatric nurses in order not to cause ethical violations within the scope of the study.

Informed Consent Statement: Informed consent was obtained from the participants of the study.

Acknowledgments: There is no acknowledgment status.

Conflict of Interest Statement: There is no conflict of interest statement.

Author Contribution Statement: Generating an idea or hypothesis for research and article; ÇMH, MZA., DDK. planning methods to achieve results: ÇMH, SC. Oversight and responsibility for the organization and course of the article: ÇMH, MZA., taking responsibility for the rationale and presentation of the findings: ÇMH. I am taking responsibility for the entire article or the creation of the central part: CMH. Before submitting the manuscript, rework not only in terms of spelling and grammar but also in terms of intellectual content: ÇMH. All authors read and approved the final manuscript.

References

1. Potter PA, Perry AG. Fundamentals of nursing. (6th ed., pp. 1198- 1227). Mosby Year Book, *St Louis*, Missouri 2009.
2. Önler E, Yılmaz, A. Sleep quality in patients hospitalized in surgical units. *Istanbul University Journal of Nursing*. 2008;16(62):114-121.
3. Engin E, Özgür G. The relationship between intensive care nurses' sleep patterns and job satisfaction. *Journal of Ege University School of Nursing*. 2004;20(2):45-55.

4. Ertekin Ş, Doğan, O. Evaluation of sleep quality in hospitalized patients. VII. National Nursing Congress *(Congress Book). Erzurum*. 22-24 June 1999:222-227.
5. Keshavarz Akhlaghi, AA, Ghalebandi MF. Sleep quality and its correlation with general health in preuniversity students of Karaj. *Iran J Psuchiatry Behav Sci*. 2009;3(1):44-49.
6. Altıntaş H, Sevencan F, Aslan T, Cinel M, Çelik E, Onurdağ, F. Evaluation of sleep disorders and sleepiness of HÜTF semester four students with the Epworth sleepiness scale. *Sted.* 2006;15(7):114.
7. Demir AU. First results of sleep epidemiology research in the adult population in Turkey. *Turkish Sleep Medicine* Association Publication 2010. Doi:10.1111/sbr.12118.
8. Orzech KM, Salafsky DB, Hamilton LAThe state of sleep among college students at a Large Public University. *J Am Coll Health*. 2011;59(7):612-619. Doi: https://doi.org/10.1080/07448481.2010.520051
9. Vail-Smith K, Felt WM, Craig C. Relationship between sleep quality and health risk behaviors ın undergraduate college students. *Coll Stud J*. 2009;43:3.
10. Li J, Zhou K, Li X, et al. Mediator effect of sleep hygiene practices on relationships between sleep quality and other sleep-related factors in Chinese mainland university students. *Behav Sleep Med*. 2016;14(1):85-99. Doi: https://doi.org/10.1080/15402002.2014.954116.
11. Mayda AS, Kasap H, Yıldırım C, et al. 4-5-6. Frequency of sleep disorders in first-year medical faculty students. *Journal of Düzce University Health Sciences Institute*. 2012;2(2): 8-11.
12. Curcio G, Ferrara M, Gennaro L. Sleep loss, learning capacity and academic performance. *Sleep Med Rev*. 2006;10:323-337. Doi: https://doi.org/10.1016/j.smrv.2005.11.001.
13. Odabaşioğlu ME, Dedeoğlu T, Kasirga Z, Sünbül F. Sleep Hygiene in University Students. *Gümüşhane University Journal of Health Sciences.* 2017;6(4):204-212.
14. Geiger-Brown J, Lindberg S, Krachman S, et al. Self-reported sleep quality and acute exacerbations of chronic obstructive pulmonary disease. *Int J Chron Obstruct Pulmon Dis*. 2015:389-397. Doi: https://doi.org/10.2147/COPD.S75840.
15. Güneş Z. The role of sleep hygiene and strategies in protecting sleep health. *Journal of Archive Literature Review* 2018;27(2):188-198. https://doi.org/10.17827/aktd.351436.
16. Buysse DJ, Reynolds III CF, Monk TH, Berman SR, Kupfer DJ. The pittsburgh sleep quality index: a new instrument for psychiatric practice and research. *Psychiatry Research*. 1989;28(2):193-213. Doi: https://doi.org/10.1016/0165-1781(89)90047-4.
17. Ağargün MY, Kara H, Anlar Ö. The validity and reliability of the pittsburgh sleep quality index. Turkish *Journal of Psychiatry*. 1996;7(2):107-15.
18. Cohen J. Statistical power analysis for the behavioral sciences. *Erlbaum*. 1988.
19. Huang CY, Liao HY, Chang ET, Lai HL. Factors associated with the teaching of sleep hygiene to patients in nursing students. *Nurse Education in Practice*. 2018;28:150-155. https://doi.org/10.1016/j.nepr.2017.10.029.
20. Kim GH, Yoon HS. Factors influencing sleep quality in nursing students and non-nursing students. *J Korean Acad Psychiatr Ment Health Nurs*. 2013;22(4): 320-329. Doi: https://doi.org/10.12934/jkpmhn.2013.22.4.320.
21. Brown FC, Buboltz Jr WC, Soper B. Relationship of sleep hygiene awareness, sleep hygiene practices, and sleep quality in university students. *Behavioral Medicine.* 2002;28(1):33-38. Doi: https://doi.org/10.1080/08964280209596396.
22. Silva M, Chaves C, Duarte J, Amaral O, Ferreira M. Sleep quality determinants among nursing students. *Procedia Soc Behav Sci*. 2016;217:999-1007. Doi: https://doi.org/10.1016/j.sbspro.2016.02.090.
23. Revathi R, Manjula A, Sujitha E. Correlation between knowledge and practice on sleep hygiene and sleep quality among nursing students. *Manipal J Nurs Health Sci*. 2016;2(2):46-49.
24. İsmailoğlu EG, Özdemir H. Factors affecting sleep hygiene training of nursing students. *J Turk Sleep Med*. 2020. Doi: 10.4274/jtsm.galenos.2020.43531.
25. 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. *Int J Caring Sci*. 2016;5(2):153. Doi: 10.15171/jcs.2016.016.
26. Amaral KV, Galdino MJQ, Martins, JT. Burnout, daytime sleepiness and sleep quality among technical-level Nursing students. *Revista Latino-Americana De Enfermagem*. 2021;29. https://doi.org/10.1590/1518-8345.5180.3487.
27. Gipson CS, Chilton JM, Dickerson SS, Alfred D, Haas BK. Effects of a sleep hygiene text message intervention on sleep in college students. *J Am Coll Health.* 2019;67(1):32-41. Doi: https://doi.org/10.1080/07448481.2018.1462816.
28. Suen LK, Tam WW, Hon KL. Association of sleep hygiene-related factors and sleep quality among university students in Hong Kong. *Hong Kong Med J*. 2010; 16(3), 180-5.
29. Hershner S, O'Brien LM. The impact of a randomized sleep education intervention for college students. *J Clin Sleep Med*. 2018;14(3):337-347. Doi: https://doi.org/10.5664/jcsm.6974.
30. Strong C, Lin CY, Jalilolghadr S, Updegraff JA, Broström A, Pakpour AH. Sleep hygiene behaviours in Iranian adolescents: an application of the Theory of Planned Behavior. *J Sleep Res*. 2018;27(1):23-31. Doi: https://doi.org/10.1111/jsr.12566.
31. Hayli ÇM, Aydin A. The effect of sleep hygiene education on sleep quality of children with ıntellectual

disabilities and their mothers according to the health promotion model. *Journal of Child*. 2023;23(3):99-107. https://doi.org/10.26650/jchild.2023.1332281.
32. Chen PH, Kuo HY, Chueh KH. Sleep hygiene education: efficacy on sleep quality in working women. *J Nurs Res*. 2010;18(4):283-289. Doi: 10.1097/JNR.0b013e3181fbe3fd.
33. Dietrich SK, Francis-Jimenez CM, Knibbs MD, Umali IL, Truglio-Londrigan M. Effectiveness of sleep education programs to improve sleep hygiene and/or sleep quality in college students: a systematic review. *JBI Evidence Synthesis*. 2016;14(9):108-134. Doi: 10.11124/JBISRIR-2016-003088.
34. Peach H, Gaultney JF, Gray DD. Sleep hygiene and sleep quality as predictors of positive and negative dimensions of mental health in college students. *Cogent Psychology*. 2016;3(1):1168768. https://doi.org/10.1080/23311908.2016.1168768.
35. Brick CA, Seely DL, Palermo, TM. Association between sleep hygiene and sleep quality in medical students. *Behavioral Sleep Medicine*. 2010;8(2):113-121. https://doi.org/10.1080/15402001003622925.
36. Ali RM, Zolezzi M, Awaisu A, Eltorki Y. Sleep quality and sleep hygiene behaviours among university students in Qatar. *International Journal of General Medicine*. 2023:2427-2439. https://doi.org/10.2147/IJGM.S402399