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The analysis of sleep quality of social studies vocational associate degree students and the factors that affect sleep quality

Bir sosyal bilimler meslek yüksekokulu öğrencilerinin uyku kalitesi ve etkileyen faktörlerin değerlendirilmesi

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Abstract

Aim: This study aimed to analyze sleep quality of Social Sciences Vocational School students and the factors that affect sleep quality.

Materials and Methods: This is a cross-sectional study. The first section included questions on sociodemographic attributes and sleep quality. In the second section, "Pittsburgh sleep quality index" was applied.

Results: 44.3% of the students had good sleep quality. Poor sleep quality was 1.5 times higher among formal education students when compared to non-formal education students, 3.4 times higher among those without a regular diet when compared to those who did have, and 1.4 times higher among those who did not regularly exercise when compared to those who did.

Conclusion: It was determined that non-formal education, irregular diet, and non-regular exercise were risk factors for poor sleep quality.

Keywords: Sleep Quality; Vocational Higher Education School; Pittsburgh Sleep Quality Index; Exercise.

Öz

Amaç: Bu çalışma Sosyal Bilimler Meslek Yüksekokulu öğrencilerinde uyku kalitesi ve etkileyen faktörlerin değerlendirilmesi amacıyla yapılmıştır.

Gereç ve Yöntem: Kesitsel bir çalışmadır. İlk kısımda sosyodemografik özellikleri, uyku kalitesi ile ilişkili olabilecek sorular sorulmuştur. İkinci kısımda "Pittsburgh uyku kalitesi indeksi" kullanılmıştır.

Bulgular: Öğrencilerin %44,3'ünün iyi uyku kalitesine sahip olduğu görülmüştür. Kötü uyku kalitesi ikinci öğretim görenlerde normal öğretim görenlere göre 1,5 kat, düzenli beslenmeyenlerde düzenli beslenenlere göre 3,4 kat ve düzenli egzersiz yapmayanlarda yapanlara göre 1,4 kat daha yüksek olduğu tespit edilmiştir.

Sonuç: İkinci öğretimde olmanın, düzenli beslenmemenin ve düzenli egzersiz yapmamanın kötü uyku kalitesi için risk faktörü olduğu görülmüştür.

Anahtar Kelimeler: Uyku kalitesi; Meslek yüksekokulu; Pittsburg Uyku Kalitesi İndeksi; Egzersiz.

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Introduction

According to the World Health Organization, health is not only the absence of illness and disability, but a holistic state of physical, mental and social well-being. Based on the promotion and improvement of health, health was not described as an abstract concept but a method to reach an objective that could be defined with functional terms, and a resource that allows people to live a personally, socially, economically and environmentally efficient life.[1]

Humans are holistic creatures with physical, spiritual, social and intellectual needs. These needs should be met within a balance for an individual to live a healthy life. One of the basic human needs that should be fulfilled is sleep.[2] Sleep is a factor that plays an important role in health, which in turn affects the quality of life and well-being of the individual.[3] Sleep is described as a state of unconsciousness that could be terminated by any sensory stimulus. It is different from coma, which is a state of unconsciousness where the individual could not be stimulated. Sleep has various levels that range between very light to very deep sleep. Previous studies investigated sleep under two categories with different properties. The individual goes through two subsequent and looped periods of sleep every night. The first is the quiescent or non-rapid eye movement sleep (NREM) where the brain waves are very slow, and the second is the rapid-eye-movement (REM) sleep where eyes move rapidly despite the sleeping state. Most of the time spent sleeping is quiescent sleep. NREM sleep is the deep and relaxing sleep that is observed during the first hour of sleep after being awake for hours.[4]

Age is the most important factor on the structural components of sleep. The sleep-wake cycle and the structural properties of sleep vary based on age, medical illness and environmental factors.[5]

Sleep is characterized by temporal increase in the lack of responses to environmental stimuli and perception but one which could be reversed.[6] Adequate, regular and quality sleep is among the recommended healthy lifestyle behavior for the preservation and improvement of health.[7] Sleep is among the most significant requirements for a healthy life. It is a period that plays an important role in the growth, development, learning and relaxation of individuals after birth, and helps them prepare for the next day. Sleep, one of the basic human requirements, plays an important role in the health and quality of life of individuals of all ages. It was reported that sleep is an essential factor in improving physical development and academic achievements.[8] Several properties of sleep such as total sleep duration, sleep latency, and sleep patterns could be analyzed. One of these properties is the quality of sleep. Sleep quality is reflected in vigor and readiness of the individual for a new day after waking up. Sleep quality, sleep latency, sleep duration, and the number of times the sleeping individual wakes up during the night provide an objective analysis of sleep, the depth of sleep and relaxation provided by the sleep. Sleep quality is important due to two reasons. The first is the prevalence of complaints about sleep quality in a society. Previous studies on sleep quality reported that 15-35% of adults experience sleep quality problems such as difficulty in falling asleep and sustaining sleep. Poor sleep quality could be the symptom of several medical diseases or could increase predisposition to several diseases.[9,10] Sleep quality has significant effects on cognitive performance and is affected by several factors such as stress.[11]

Vocational schools (VS) are institutions affiliated by universities that provide two-year associate degree programs. They provide both formal and non-formal education. Formal education is conducted during the day, while non-formal education is provided in evening. It could be suggested that there could be a difference between the sleep quality of formal education and non-formal education students. The present study aimed to analyze the sleep quality of the students attending both formal and non-formal education in Fırat University Social Sciences Vocational School and factors associated with sleep quality.

Materials and Methods

Type of research

This is a cross-sectional study

The population and the sample of the study

The population of the present study included all students attending Fırat University, Social Sciences Vocational School. Social Sciences Vocational School has 10 departments including office and secretarial services, public relations, foreign trade, finance, banking and insurance, local administration and organization, accounting and tax, hotel, restaurant and catering services, business, marketing and advertising, and justice departments. All departments have non-formal education courses (except the hotel, restaurant and catering, justice, and marketing and advertising departments). The number of students was 1151. The sample size was calculated with the n=[DEFF*Np(1-p)]/[(d2/Z21-α/2*(N-1)+p*(1-p)] formula. Since the stratified sampling method was employed d was accepted as 2 in the formula. Thus, at least 577 subjects are required for 95% confidence interval. The authors reached 630 individuals. Then, due to the stratified sampling method, the students were weighted based on their department, seniority, and whether they attended formal or non-formal education, and they were assigned to the sample based on the weighted score.

Data collection tools

The study data were collected with a questionnaire developed by the authors based on a literature review. The questionnaire was completed by the participant under direct observation after the required information was provided. The questionnaire includes two sections. The first section includes socio-demographic information and questions that aimed to analyze certain factors that were considered to have an impact on sleep quality. The second section includes Pittsburgh Sleep Quality Index (PSQI) items.

Pitssburgh Sleep Quality Index (PSQI, PSQI)

Pitssburgh Sleep Quality Index (PSQI, PSQI) was developed by Buysse et al. in 1989 to analyze the quality of sleep during the previous month. The internal consistency, test-retest reliability and validity of the study were confirmed.[10] The validity and reliability of the Turkish language of the index was determined and approved by Ağargün et al. (1996).[9] The scale includes 24 items, and 19 items are self-report questions, and 5 are answered by the spouse or the roommate of the participant. These 5 questions are used only for clinical purposes and are not included in the score. Question 19, one of the self-report items, aims to determine the presence of a roommate or a spouse and is not included in the total and dimension scores. Self-report items include various factors associated with sleep quality. These factors include sleep duration, sleep latency, and the frequency and severity of specific sleep problems. Eighteen scored items are categorized in 7 dimensions. Certain dimensions include a single item, while others include several items. Each item could be scored between 0 and 3 points. The total score could vary between 0 and 21. A high total score indicates poor sleep quality. The scale could not determine the presence or the prevalence of sleep disorders. However, it was reported that a total PSQI score of 5 or above indicates poor sleep quality.[9]

Data analysis

The analyzes were conducted with the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL) v. 22 software. Descriptive study data are presented as counts and percentages for categorical data, and as mean ± standard deviation (Mean ± SD) for continuous data. Chi-square analysis (Pearson Chi-square) was conducted to compare categorical variables between the groups. Normal distribution of continuous variables was determined with the Kolmogorov-Smirnov test. Student t-test was employed for comparison of paired groups. Factors that affect sleep quality were analyzed with the Binary Logistic Regression model. As a result of Chi-square analysis, Education type (referance group: formal), daytime somnolence (referance group: no), regular diet (referance group: yes) and regular exercise (referance group: yes) variables were included in the model. The statistical significance (p) was accepted as <0.05 in the analyzes.

Ethical aspect of the research

Ethical approval for the study was obtained from the Ethics Committee of Firat University with the decision (15/04/2019-323330).

Results

Among the participants, 365 (57.9%) students were female, 31 (4.9%) were married, and the average participant age was 21.6±4.2 (min=18-max=54). 363 (57.6%) students were freshmen, and 403 (64%) attended formal education. The mean student BMI was 22.1±3.4 and the mean sleep duration was 7.9±2.1 hours. 208 (33%) participants experienced daytime somnolence. While 242 (38.4%) students followed a regular diet, 251 (39.8%) exercised regularly. Also, 294 (46.7%) of the students consume cigarettes and 123 (19.5%) consume alcohol. 281 students (44.6%) adopted a habit to fall asleep comfortably, 449 (71.3%) listened to music before sleep, and 165 (26.2%) ate before sleep. 532 (84.4%) participants consumed caffeinated beverages during the day (Table 1).

Table 1. Student socio-demographics and characteristics related to sleep quality.

		n	%
Gender	Female	365	57.9
	Male	265	42.1
Marital status	Married	31	4.9
	Unmarried	599	95.1
Perceived Income Level	High	63	10.0
	Middle	409	64.9
	Poor	158	25.1
Perceived health	Good	343	54.4
	Moderate	246	39.0
	Poor	41	6.5
Daytime somnolence	Yes	208	33.0
	No	422	67.0
Regular diet	Yes	242	38.4
	No	388	61.6
Regular exercise	Yes	251	39.8
	No	379	60.2
Smoking	Yes	294	46.7
	No	336	53.3
Alcohol consumption	Yes	123	19.5
	No	507	80.5
Habits to facilitate sleep	Yes	281	44.6
	No	349	55.4
Listening to sleep before sleep	Yes	449	71.3
	No	181	28.7
Eating before sleep	Yes	165	26.2
	No	213	33.8
	Sometimes	252	40.0
Daytime caffeinated drink consumption	Yes	532	84.4
	No	98	15.6

The distribution of the students based on department and seniority is presented in Figure 1.

The mean PSQI scale score of the students was 6.5 ± 3.3, and 279 (44.3%) students reported good sleep quality and 351 (55.7%) reported poor sleep quality.

Good sleep rates of those who received formal education were found to be significantly higher than those who received non-formal education (p=0.024.). The rate of good sleep of those who perceived their health status as good was higher than the rate of those who perceived their health status as bad (p<0.001). Good sleep rate was found to be lower in those with daytime somnolence (p<0.001). Good sleep rates were found to be higher in those who regularly eat (p<0.001) and exercise (p=0.003). Smokers have a lower rate of good sleep (p=0.003). Those who had the habit of falling asleep comfortably (p=0.03), those who listened to music before going to sleep (p=0.002), and those who had

the habit of eating before going to sleep (p=0.021) had a lower good sleep rate (p<0.05). The mean daily sleep duration of those with good sleep quality was significantly higher than those with poor sleep quality (p=0.002) (Table 2).

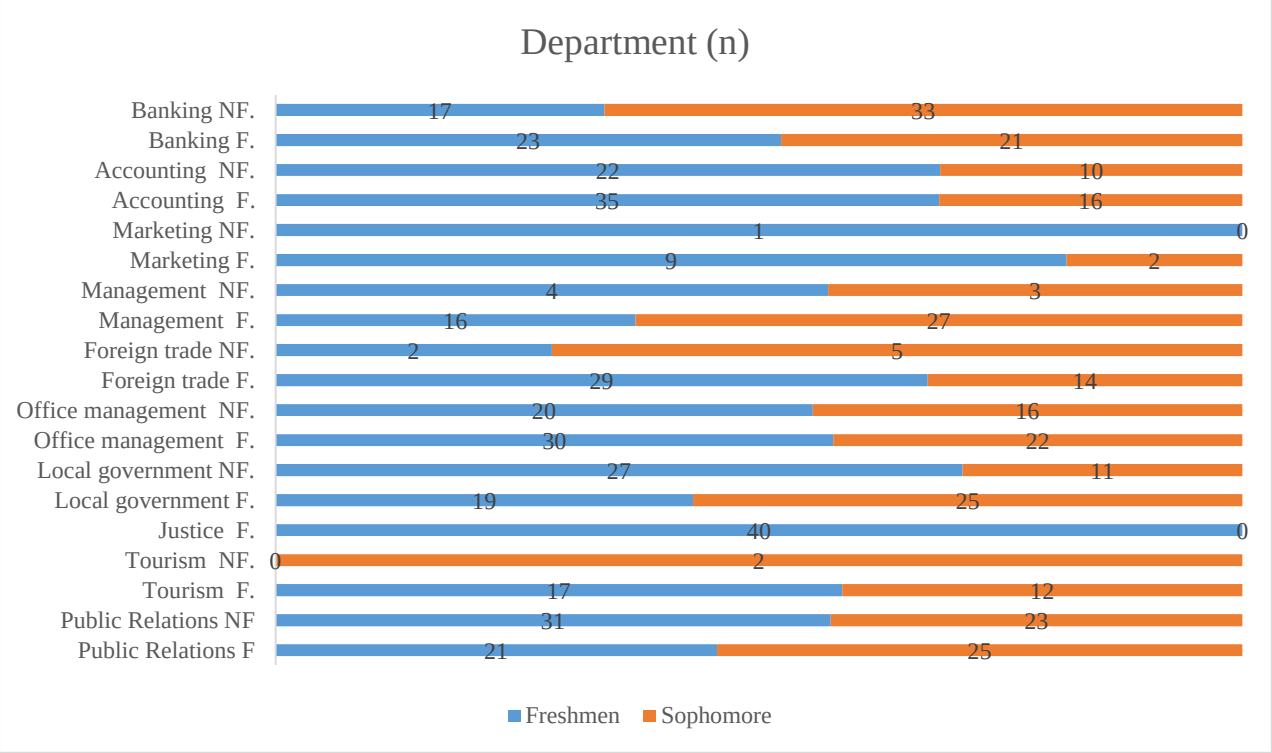

Figure 1. The distribution of the students based on department.

Table 2. The analysis of sleep quality based on Student socio-demographics and characteristics related to sleep quality.

		Good Sleep		Poor sleep		p^*
		n	%	n	%	
Gender	Female	155	55.6	210	59.8	0.280
	Male	124	44.4	141	40.2	
Age. Mean ± SD		21.6±4.6		21.6±4.0		0.945**
Marital status	Married	13	41.9	18	58.1	0.787
	Unmarried	266	44.4	333	55.6	
Class	Freshmen	168	46.3	195	53.7	0.241
	Sophomore	111	41.6	156	58.4	
Education type	Formal	192	47.6	211	52.4	**0.024**
	Non-formal	87	38.3	140	61.7	
Perceived health	Good	179	52.2	164	47.8	**<0.001**
	Moderate	91	37.0	155	63.0	
	Poor	9	22.0	32	78.0	
Chronic illness	Yes	5	26.3	14	73.7	0.109
	No	274	44.8	337	55.2	
Regular prescription	Yes	4	36.4	7	63.6	0.763
	No	275	44.4	344	55.6	
Psychological disorder	Yes	2	100.0	0	.0	0.196
	No	277	44.1	351	55.9	
Perceived income level	High	29	46.0	34	54.0	0.127
	Middle	191	46.7	218	53.3	
	Poor	59	37.3	99	62.7	
Daytime somnolence	Yes	60	28.8	148	71.2	**<0.001**
	No	219	51.9	203	48.1	
Regular diet	Yes	160	66.1	82	33.9	**<0.001**
	No	119	30.7	269	69.3	
Regular exercise	Yes	129	51.4	122	48.6	**0.003**
	No	150	39.6	229	60.4	

Smoking	Yes	112	38.1	182	61.9	**0.003**
	No	167	49.7	169	50.3	
Alcohol consumption	Yes	49	39.8	74	60.2	0.268
	No	230	45.4	277	54.6	
Habits to facilitate sleep	Yes	106	37.7	175	62.3	**0.03**
	No	173	49.6	176	50.4	
Listening to sleep before sleep	Yes	181	40.3	268	59.7	**0.002**
	No	98	54.1	83	45.9	
Eating before sleep	Yes	58	35.2	107	64.8	
	No	104	48.8	109	51.2	**0.021**
	Sometimes	117	46.4	135	53.6	
Daytime caffeinated drink consumption	Yes	231	43.4	301	56.6	0.309
	No	48	49.0	50	51.0	
Sleep duration. Mean ± SD		8.2±1.8		7.7±2.3		**0.002****
BMI. Mean ± SD		22.1±3.4		22.1±3.4		0.949**

*Chi-square analysis, **Independent groups t test.

Significant categorical comparisons were included in the logistic regression model. In the model, the dependent variable was accepted as good and poor sleep quality. The analysis results demonstrated that poor sleep quality was 1.5 (95% CI: 1.1-2.1) times higher among those who attended non-formal education when compared to those who attended formal education, 1.7 (95% CI: 1.1-2, 6) times higher among those with daytime somnolence when compared to those who did not, 3.4 (95% CI: 2.3-4.9) times more among those without a regular diet and 1.4 (95% CI: 1.1-2.1) times more among those who did not exercise regularly (Table 3).

Table 3. The risk factors that affect sleep quality.

Variable (Referance group/Risk Group)	β	OR	%95 GA	*p*
Education type (Formal/Non-formal)	0.383	1.5	1.1-2.1	**0.035**
Daytime somnolence (No/Yes)	0.688	1.9	1.4-2.9	**<0.001**
Regular diet (Yes/No)	1.299	3.7	2.6-5.2	**<0.001**
Regular exercise (Yes/No)	0.411	1.6	1.2-2.2	**0.004**

Discussion

It was determined that there were differences between the biological clock of day shift workers and night shift workers. In particular, sleep problems and resulting health problems may be observed in individuals who work at night and attend night school due to problems in biological clock.[12,13] In the present study, the sleep quality of the students attending formal and non-formal education was analyzed.

In tertiary education, students conduct high levels of social relations and activities and study.[14] Thus, students may experience problems in their diet, exercise and sleep patterns. For the same reason, habits such as smoking, and alcohol consumption could also increase. It was determined that less than half of the students follow a regular diet (38.4%) and exercise regularly (39.8%) in the present study. 46.7% of the students smoked and 19.5% consumed alcohol. Similar results were reported in the literature.[15-17]

It was observed that college students experienced problems in diet, exercise and sleep and these problems could be higher among non-formal education students. In our study, it was determined that the mean PSQI scale score of the students was quite low (6.5±3.3). Suen et al.[18] reported that the mean PSQI score of university students was 5.20±2.45, Yarmohammadi et al. reported that the mean PSQI score of the students attending the Faculty of Health Sciences was 5.16±2.88, Pallos et al. reported that the mean PSQI score of university students was 5.00±2.7.[19,20] It was found that the mean PSQI score was higher in night shift workers or college students who attended non-formal education.[21-23] It could be suggested that the differences determined in the present study was due to the fact that certain students attended non-formal education. In the present study, the rate of poor sleep quality of those who attended non-formal education was

significantly higher than those who received formal education.

In our study, the analysis of the relationship between perceived health and sleep quality revealed that the rate of poor sleep quality increased significantly with the decrease in perceived health. On the other hand, there was no significant difference between chronic disease, regular prescription, psychological disorder and sleep quality. Similar to the present study, no significant relationship was determined between physical or psychological illness and sleep quality in a study by Üstün and Yücel.[24] Thus, it could be suggested that the physical and phycological disorders in the sample were not significant enough to affect sleep quality; however, perceived general health included dimensions that could affect the sleep quality.

Among the participants, it was determined that those with daytime somnolence exhibited significantly higher rates of poor sleep when compared to those who did not. In addition, the total sleep duration of those with good sleep quality was significantly higher when compared to those with poor sleep quality. Previous studies reported that individuals with sleep problems or daytime somnolence had poor sleep quality, similar to the present study findings.[25,26] Zebrowski et al. reported that a decrease in the mean daily sleep duration led to poor sleep quality and increased daytime somnolence.[27] Thus, it could be suggested that sleep duration, daytime somnolence and sleep quality are correlated and could trigger one another.

There is a close relationship between sleep quality and diet. It was reported that poor sleep quality could lead to nutritional problems, and malnutrition could impair sleep quality.[28] In the present study, the rate of poor sleep among individuals without a regular diet and who ate regularly before sleep were significantly higher. Mota et al. reported that people with poor sleep quality followed a poor diet.[29]

Epidemiological studies supported the hypothesis that exercise had positive effects on sleep.[30,31] In our study, the sleep quality of those who exercised regularly was significantly higher than those who did not. In a previous study, participants stated that exercise facilitated falling asleep, provided a deeper sleep, and they felt better when they woke up in the morning.[30] Kelley et al. reported that there was a significant correlation between physical exercise and sleep quality.[32]

It was reported that smoking had negative effects on sleep quality. It leads to problems in falling asleep by inhibiting the release of neurotransmitters that regulate the circadian rhythm in the central nervous system.[33] Furthermore, since blood nicotine levels decrease during sleep, it could lead to withdrawal symptoms and the individual may wake up to smoke.[34] In the present study, it was found that sleep quality of smokers was significantly worse than non-smokers. In a study conducted by Bakır and Çalapkorur, it was found that the sleep quality of smokers was worse.[28]

Limitations

The most important limitation of our study is that it was conducted in a single center. This may hinder the generalizability of the results. Another limitation of our study is that causality could not be found because the study was cross-sectional.

Conclusion

It was determined that the sleep quality of the social studies vocational school students was generally poor, non-formal education, daytime somnolence, irregular diet, non-regular exercise, and short sleep were risk factors for poor sleep quality. It would be beneficial to inform students about these risks and provide education on sleep quality.

Ethics Committee Approval

The research has been prepared in accordance with the Declaration of Helsinki Principles. Ethics committee approval was obtained from the Firat University Faculty of Social and Human Sciences Research Ethics Committee of the relevant university (Date: 15.04.2019 and Number: 323330).

Informed Consent

From all participant included in the study an informed consent form was obtained.

Author Contributions

Study design: OK, RD, ASY; Data collection: OK, RD; Data analysis: OK; Manuscript writing: OK, RD, ASY

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Conflict of Interest

The authors declared no conflict of interest.

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Statements

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