Research Paper – Araştırma Makalesi

ADHERENCE TO MEDITERRANEAN DIET AND SLEEP QUALITY IN UNIVERSITY STUDENTS

ÜNİVERSİTE ÖĞRENCİLERİNDE AKDENİZ DİYETİNE BAĞLILIK VE UYKU KALİTESİ

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Özet

Sağlıklı beslenme yaşam kalitesinin önemli bir destekçisidir. Gıda temel bir insan hakkıdır. Uyku da yemek gibi yaşamın vazgeçilmez bir parçasıdır. Sağlıklı bir beslenme ve kaliteli uyku sağlığımıza ve refahımıza katkıda bulunabilir. Bu çalışma, üniversite öğrencilerinin Akdeniz diyetine bağlılık ve uyku kalitesini saptanması amacıyla yapılmıştır. Çalışma, Türkiye Cumhuriyetindeki Yüksek Öğretim Kurumlarında öğrenim gören ve çalışmaya katılmayı gönüllü olarak kabul eden, 331 kadın, 149 erkek toplam 480 kişi üzerinde yapılmıştır. Bireylerin, demografik özellikleri, sigara, alkol ile kafeinli içecek kullanımı, beslenme alışkanlıkları anket formuyla sorgulanmıştır. Akdeniz diyetine bağlılığı değerlendirmek için Akdeniz Diyetine bağlılık ölçeği (MEDAS) ile uyku kalitesinin değerlendirilmesinde Pittsburgh Uyku Kalitesi İndeksi (PUKI) uygulanmıştır. Katılımcıların %69.0 (n=331) kadın, %31 (n=149) erkektir. Yaş ortalaması; 21.00±2.853, beden kütle indeksi ortalaması kadınlarda 21.23±4.921 kg/m²; erkeklerde ise 24±3.223 kg/m² bulunmuştur. Çalışmaya katılanların Akdeniz diyetine bağlılıkları %47.3'ü (n=227) yetersiz bağlılık olan 7 puanın altında, %27.1'i (n=130) kabul edilebilir bağlılık olan 7-8 puan aralığında iken, %25.6'sı (n=123) sıkı bağlılık olan 9 puanın üzerinde bulunmuştur. Yine katılımcıların, toplam PUKI puanı ortalaması 6.29±3.06, kadınların ortalama PUKI puanı 6.33±2.93 iken erkeklerin ortalama PUKI puanı 6.19±3.36'dır. Kadın ve erkeklerin PUKI puanları arasında anlamlı düzeyde farklılık bulunmamaktadır (p>0.05). Uyku ve beslenme durumunun sağlık üzerinde birçok etkisi bulunmaktadır. Bu nedenle öğrencilerin uyku kalitesinin artırılması ve beslenme durumlarının iyileştirilmesi için bireylere eğitimler verilmelidir.

Anahtar Kelimeler: Beslenme, Akdeniz Diyeti, Uyku Kalitesi, MEDAS, PUKI

Abstract

This study was conducted to determine the adherence to the Mediterranean diet and the sleep quality of university students. The study was carried out on 480 people, 331 women and 149 men, who were studying at Higher Education Institutions in the Republic of Türkiye and voluntarily accepted to participate in the study. The demographic characteristics of the individuals, smoking, alcohol and caffeinated beverage use, and dietary habits were questioned with a questionnaire. The Mediterranean Diet Adherence Scale (MEDAS) was used to assess adherence to the Mediterranean diet, and the Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality. Participants were made up of 69.0% (n=331) females and 31% (n=149) males. The average age; was 21.00±2.853, mean body mass index was 21.23±4.921 kg/m² in women; in males, it was found to be 24±3.223 kg/m². Adherence to the Mediterranean diet of the participants was 47.3% (n=227) below 7 points, which was insufficient adherence, 27.1% (n=130) were within the range of 7-8 points, which was acceptable adherence, and 25.6% (n=123) It was found above 9 points, which is strict adherence. Again, the average PSQI score of the participants is 6.29±3.06, the average PSQI score of women is 6.33±2.93 while the average PSQI score of men is 6.19±3.36. There was no significant difference between the PSQI scores of women and men (p>0.05). Sleep and nutritional status have many effects on health. For this reason, training should be given to individuals to increase the sleep quality of the students and to improve their nutritional status.

Keywords: Nutrition, Mediterranean Diet, Sleep Quality, MEDAS, PSQI

1. INTRODUCTION

Nutrition is required for growth, development, life preservation, and health protection. Individual differences in nutritional needs can be influenced by age, gender, physical exercise, illness state, and genetic variables (Özakar Akça and Selen, 2015, pp.394-400). An adequate and balanced diet is defined as consuming sufficient amounts of energy and minerals for the body's development, renewal, and working, as well as using them correctly (Dilmaç and Kalkan, 2020, pp.41-47). University students commonly deal with the issue of inadequate and unbalanced diet, which is one of Turkey's societal challenges. It has been determined that students generally do not pay attention to meals. They consume their meals as a single meal, they consume more snack foods such as sandwiches, and bagels, their economic conditions are not effective in balanced diet and faced with malnutrition problems. The students who stay in the dormitories due to poor conditions do not have a good diet and they only fill their stomachs (Onurlubaş et al., 2015, pp.61-69).

The start of university studies often involves students moving away from their family homes and taking responsibility for their own food choices, which can influence their dietary habits. Factors such as being male, living outside the family home, peer group pressure, low socioeconomic status, and low physical activity levels, as well as the price of food and kitchen supplies, kitchen knowledge and cooking skills, can pose obstacles to healthy eating among university students. University students often have diets characterized by being hypercaloric (high in calories) and unstable. They tend to consume high levels of alcoholic and sugary beverages, as well as processed foods that are high in fat, sugar, and sodium, while being low in fiber. They also tend to consume insufficient amounts of fruits, vegetables, olive oil, whole grains, and nuts. This pattern is particularly visible during exam times (Vélez-Toral et al., 2021, pp.3769). This may cause university students to develop negative eating habits that can lead them to gain weight and ignore healthy eating recommendations. These habits can have long-term health consequences, including obesity, cardiovascular diseases, and Type 2 diabetes. Educating students about the importance of healthy eating is essential for their future health (Yangılar and Karahan Yılmaz, 2022, pp.976-985). The Mediterranean diet is a healthy eating pattern that contributes to health status. Studies have also shown that this diet promotes healthy aging (Özkan Pehlivanoğlu et al., 2020, pp.160-164). The traditional Mediterranean diet consists of a high intake of olive oil, fruit, nuts, veggies, and cereals, with a moderate intake of seafood and chicken, a low intake of dairy products, red meat, processed meats, and sweets, and a moderate intake of wine (Estruch et al., 2018, pp.1279-1290). Many studies have been conducted to demonstrate the beneficial effects of the Mediterranean diet on physical and mental health, particularly cardiovascular, metabolic, cancer, and neurological illnesses. This diet is minimal in environmental footprint because it is high in plant-based foods. Local, conventional, fresh, and barely prepared meals are favored, and they should be consumed on a regular basis. Furthermore, the rich fiber supply promotes satiety and aids in the regulation of body weight, blood sugar, and cholesterol control (Ruini et al., 2015, pp.1-6). This diet emphasizes a balanced and diverse intake of foods, promoting long-term health and well-being. Additionally, adopting a Mediterranean diet can be beneficial not only for individuals but also for biodiversity, as it promotes sustainable and eco-friendly food choices (Yangılar and Karahan Yılmaz, 2022, 976-985).

Sleep, like food, is an indispensable part of life (Dilmaç and Kalkan, 2020, pp.41-47). Sleep is defined as the temporary, partial, and periodic loss of the organism's communication with the environment, reversibly, with stimuli of varying intensity. This is the period of resting the body, repairing, and renewing cells, ensuring learning by regulating memory functions and preparing for a new day (Şenol et al., 2012, pp.93-102). Briefly, sleep is a condition of bodily and cerebral rest in an inactive state. Sleep is linked with many components of metabolism, particularly energy saving, nervous system development, and repair, and it has been documented that irregular and/or inadequate sleep results in a variety of pathophysiological events (Bakır and Çalapkorur, 2020, pp.1-10). Meals high in macro and micronutrients have the potential to affect an individual's slumber. Short sleep length can increase food intake or hunger, causing changes in diet macronutrient composition and caused obesity and associated illnesses (Şahin et al., 2020, pp.29-39). On the other hand, prolonged slumber can cause the body's circadian rhythm and energy metabolism to be disrupted, which can result in obesity and a sedentary lifestyle. In addition, it shows that individuals who sleep more than 8 hours eat unhealthier than those who sleep 7 or 8 hours, and the ratio of energy coming from carbohydrates is higher in a diet where their consumption of vegetables and fruits is lower. In addition to sleep duration, sleep quality is also associated with nutritional habits and dietary nutrients (Bakır and Çalapkorur, 2020, pp. 1-10). The timing, length, and intensity of slumber are all affected by a variety of variables. Neuropeptides and diet are two of these variables. Dietary carbohydrates, proteins, and some important fatty acids have been shown in studies to affect sleep control. Many variables influence sleep rhythm, length, and severity, particularly some circadian and balancing processes. (Gezmen Karadağ and Aksoy, 2009, pp.9-15).

Many university students experience a part of their adolescence during their university years. This phase involves significant physical and psychological development, and it coincides with the pursuit of higher education. These changes can impact various aspects of students' lives. University life often leads to disrupted sleep patterns. Factors such as academic pressure, excessive workload, extracurricular activities, and the influence of technology (like late-night internet use) can contribute to inadequate sleep. Students may also adopt the tendency to go to bed late and wake up late. Circadian rhythms play a crucial role in students' cognitive and academic performance. Disrupted sleep patterns and poor nutrition can affect these rhythms and, consequently, academic success (Yangılar and Karahan Yılmaz, 2022, pp.976-985). University students are at danger for sleep issues, which are becoming more common by the day. After getting up sleep quality is defined as the person feeling fit, formed, and ready for a new day. It is critical to understand how pupils' nutritional state and food groups eaten influence their sleepiness. Certain foods and drinks have been shown to interfere with slumber (Uysal et al., 2018, pp.31-39).

In summary, the university years are a critical time for young adults, and the habits they develop during this period can have a significant impact on their future health and well-being. Educating students about healthy eating and sleep patterns, as well as promoting the benefits of the Mediterranean diet, can contribute to better health outcomes and a more sustainable lifestyle. The aim of this research was to see how devotion to the Mediterranean Diet and dietary choices of students learning at Higher Education Institutions in the Republic of Türkiye affected their sleep quality.

2. METHODS

2.1. Participants, recruitment, and sample

The data of the research were obtained from the online questionnaire form, which was applied to 480 students who continued their education in Higher Education Institutions in the Republic of Türkiye between March and May of 2022 and agreed to participate in the study. In the cross-sectional study, sampling was not used since it was aimed to reach high participation. Since it was aimed to reach high participation in the study, the convenience sampling method was used. According to the higher education statistics for the 2021-2022 period announced by the higher education institution, the total number of students registered at the associate degree and undergraduate level in universities in Türkiye was 7 million 829 thousand 148 (YOK, 2023). According to the sample calculation, it was planned to include at least 384 participants with a 95% confidence level and 5% acceptable error (SSC, 2023). Before beginning the research, the participants provided written informed permission. People who did not study at Higher Education Institutions in the Republic of Turkey and did not agree to engage were not included in the research.

2.2. Data collection

The 30-question questionnaire used in this study was developed following a survey of the literature by the researchers (Bakır and Çalapkorur, 2020, pp.1-10; Deniz, 2021; Uysal et al., 2018, pp.31-39). The questionnaire form consists of three parts. While the first part contains information about the socio-demographic characteristics of the participants (age, gender, height, weight, department of education, frequency, and preferences of meal consumption), the second part includes the Mediterranean Diet Adherence Scale (MEDAS), the final section is the Pittsburgh Sleep Adherence Scale (PSQI), which is used to assess the quality index.

MEDAS was created by Trichopoulou et al. in 1995 and was updated by Estruch et al. in 2003 as part of the PREDIMED study (Estruch et al., 2018, pp.1279-1290; Trichopoulou et al., 1995, pp.1457-1460). Its Turkish adaptation was done by (Özkan Pehlivanoğlu et al., 2020, pp.160-164). MEDAS is a questionnaire that includes the type of basic oil used by the participants in meals, the amount of olive oil consumed daily, fruit and vegetable portions, red meat, butter-margarine, and sugary or sweetened beverage consumption weekly consumed wine, dried legumes, fish-seafood. For meals, consume desserts or pastries, nuts, sirloin, pig, packaged meat product, and olive oil with vegetable sauce. Each question based on the quantity of consumption is assigned 0 or 1 point, and the overall score is computed. Each question based on the quantity of consumption is assigned 0 or 1 point, and the overall score is computed (Özkan Pehlivanoğlu et al., 2020, pp.160-164).

PSQI is an index developed by (Buysse et al., 1989, pp.193-213)to evaluate the sleep quality of patients over one month in clinical studies. The validity and reliability studies of the scale in our country were carried out in 1996 by (Ağargün et al., 1996, pp.107-115). PSQI consists of 24 questions in total. While the first 19 questions are questions that the individual will evaluate himself, the remaining 5 questions are questions to be answered by the individual's roommate or spouse, if any. The first 18 questions answered by the participant himself were used to calculate the PSQI total score and component scores. The 18 questions answered by the participant included sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping pills and it provides information on 7 components, including

daytime sleep dysfunction. Each component is evaluated from 0 to 3 points. The sum of these 7 component scores gives the total PSQI score. The total PSQI score varies between 0-21. The sleep quality of people with a total score of 5 or less is considered "good", while the sleep quality of individuals with a score above 5 is considered "poor" (Balcı, 2017).

2.3. Statistical analysis

The collected data were analyzed using the SPSS 26 descriptive statistics software. The chi-square test was used to determine whether the connection between the factors was significant, and it was used to demonstrate introductory information about the research subjects. The statistical significance threshold was set at $p<0.05$.

2.4. Declaration of Ethical

All procedures performed in this study were approved by ethical approval with the code 2011-KAEK-2 and permission with the date of 07.01.2022 were obtained for the study by the Afyonkarahisar Health Sciences University Non-Interventional Clinical Research Ethics Committee at the meeting numbered 2022/1.

3. RESULTS

The study was carried out on 480 people. The mean age of the participants was 21.00±2.853 years and the mean body mass index (BMI) was 21.65±3.69 kg/m^2. Participants were made up of 69.0% (n=331) females and 31% (n=149) males. According to their educational status, the highest participation was by the students of the Nutrition and Dietetics department (n=122, 25.4%). While 85.0% (n=408) of the participants did not have any chronic disease, 15.0% (n=72) reported that they had a chronic disease (Table 1).

Table 1: Socio-demographical characteristics of university students

Variables	n (480)	% (100)
Gender		
Male	149	31.0
Female	331	69.0
Department		
Faculty of Agriculture	4	0.8
Faculty of Architecture and Engineering	97	20.2
Faculty of Business and Economics	10	2.1
Faculty of Communication	6	1.3
Faculty of Dentistry	10	2.1
Faculty of Education	48	10.0
Faculty of Health Sciences	193	40.2
Faculty of Law	21	4.4
Faculty of Medicine	13	2.7
Faculty of Pharmacy	15	3.1
Faculty of Sciences and Literature	17	3.4
Faculty of Tourism	10	2.1
Faculty of Veterinary Medicine	14	2.9
İslamic Studies	8	1.7
Vocational School	6	1.3

	n	%
Vocational School of Health	8	1.7
Household		
At home with family	137	28.5
At home with kinship	2	0.4
At dorm with friends	193	40.2
At home with friends	135	28.2
Alone	13	2.7
Diagnosed Disease Status		
Yes	72	15.00
No	408	85.00
Diagnosed Diseases	**n (72)**	**% (100)**
Anemia (Iron and Vitamin B_{12})	5	6.9
Asthma - COPD	5	6.9
Familial Mediterranean Fever (FMF)	2	2.8
Diabetes	6	8.3
Cancer (Lymphoma)	1	1.4
Thyroid	4	5.6
Cardiovascular diseases	3	4.2
Migraine	17	23.6
Gastrointestinal diseases	13	18.1
Rheumatic diseases	10	13.9
Polycystic ovary syndrome (PCOS)	3	4.2
Pollen and Food Allergy	1	1.4
Psoriasis	2	2.8

n: Number of Participants, %: Percent

Table 2 shows the distribution of cigarette, alcohol, and caffeinated beverage consumption by university students are given. According to the table, non-smoking status is 70.4% (n=338) and non-alcohol usage is 60% (n=288), while caffeinated beverage consumption status is 95.2% (n=457). In terms of the frequency of consumption of caffeinated beverages, coffee (41.9%, n=201) and tea (48.1%, n=231) were mostly consumed 1-3 times a day. The rate of not consuming cola (22.1% n=106), herbal tea (42.3% n=203), and energy drinks (78.1% n=375) was found to be higher (Table 2).

Table 2: University students' cigarette, alcohol, and caffeinated beverage consumption table

	n (480)	% (100)
Smoking		
Yes	142	29.6
No	338	70.4
Alcohol Usage		
Yes	192	40.0
No	288	60.0
Caffeinated Beverage Consumption		
Yes	457	95.2
No	23	4.8

	None		1-3 times a day		4-6 times a day		≥7 times a day		Once a week		1-3 times a week		3-5 times a week		Fortnightly		Monthly	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Coffee	19	4.0	201	41.9	13	2.7	8	1.7	38	7.9	39	8.1	132	27.5	25	5.2	5	1.0
Tea	15	3.1	231	48.1	74	15.4	31	6.5	15	3.1	22	4.6	75	15.6	9	1.9	8	1.7
Coke	106	22.1	51	10.6	10	2.1	1	0.2	55	11.5	31	6.5	83	17.3	59	12.3	84	17.5
Herbal tea	203	42.3	53	11.0	5	1.0	3	0.6	46	9.6	7	1.5	69	14.4	41	8.6	53	11.0
Energy drink	375	78.1	7	1.5	1	0.2	-	-	8	1.7	-	-	24	5.0	10	2.1	55	11.5

n: Number of Participants, %: Percent

The consumption trends of major meals (p>0.05) and snacks (p>0.05) were not statistically significant according to gender. It was discovered that 83.1% of the subjects (n=399) missed meals. The gender difference in meal avoidance was statistically significant (p<0.05). It was discovered that 45.9% (n=183) of the 399 individuals who stated that they missed meals skipped snacks, and 54.1% (n=216) skipped meals due to a shortage of time. According to gender, the missed meal (p>0.05) and the cause for missing a meal (p>0.05) were statistically insignificant (Table 3).

When the relationship between food consumption before bedtime and gender is examined; 58.9% (n=195) of women and 77.2% (n=115) of men consume the food before going to bed. There was no statistically significant difference between consuming the food before bedtime and gender (p>0.05). When the relationship between gender and the time ate before going to bed is examined; 8.2% (n=16) of women consumed food 60 minutes before, 27.2% (n=53) 120 minutes before, 19.5% (n=38) more than 4 hours before, 2-4 hours before bedtime. the rate of those who consume food is 45.1% (n=88). While 8.7% (n=10) of the men consumed food 60 minutes before, 31.3% (n= 36) 120 minutes before, 19.1% (n=22) more than 4 hours before, 2-4 hours before bedtime the rate of those who consume food is 40.9% (n=47). There was no significant difference between gender and the time consumed before going to bed (p>0.05).

Table 3: Meal habits of participants by gender.

Mealtime	Female		Male		Total		P-value[a]
	n (331)	% (100)	n (149)	% (100)	n (480)	% (100)	
Main Meal							
1	7	2.1	7	4.7	14	2.9	
2	159	48.0	70	47.0	229	47.7	p=0.072
3	165	49.9	70	47.0	235	49.0	
More than 4	-	0.0	2	1.3	2	0.4	
Snack							
Never	27	8.1	19	12.8	46	9.6	
1	97	29.3	56	37.6	153	31.8	
2	130	39.3	46	30.9	176	36.7	p=0.097
3	72	21.8	25	16.7	97	20.2	
More than 4	5	1.5	3	2.0	8	1.7	
Skip a Meal							
Yes	284	85.8	115	77.2	399	83.1	p=0.020
No	47	14.2	34	22.8	81	16.9	
Skipping Meals	Female		Male		Total		P-value[a]
	n (284)	% (100)	n (115)	% (100)	n (399)	% (100)	
Main meal	52	18.3	23	20.0	75	18.8	
Snack	128	45.1	55	47.8	183	45.9	p=0.105
Meal + Snack	104	36.6	37	32.2	141	35.3	
Reason for Skipping Meals							
Lack of appetite	38	13.4	17	14.8	55	13.8	
None-habit	86	30.3	22	19.1	108	27.1	p=0.334
To lose weight	14	4.9	6	5.2	20	5.0	
Timelessness	146	51.4	70	60.8	216	54.1	

[a]:Chi square test, n:Number of Participants, %:Percent

Table 4: Eating habits of the participants close to and during the sleeping period by gender.

Mealtime	Female		Male		Total		P-value[a]
	n (331)	% (100)	n (149)	% (100)	n (480)	% (100)	
Consumption of Food Before Bedtime							
Yes	195	58.9	115	77.2	310	64.6	p=0.879
No	136	41.1	34	22.8	170	35.4	
How Long Before Bedtime Do You Consume Food	**Female**		**Male**		**Total**		P-value[a]
	n (195)	% (100)	n (115)	% (100)	n (310)	% (100)	
< 60 Dk	16	8.2	10	8.7	26	8.4	
60-120 Dk	53	27.2	36	31.3	89	28.7	
120-240 Dk	88	45.1	47	40.9	135	43.5	p=0.860
>240 Dk	38	19.5	22	19.1	60	19.4	
Foods Consumed Before Bedtime							
Dessert/Chocolate/Wafer	24	12.3	17	14.8	41	13.3	
Chips/Biscuits/Crackers	54	27.7	32	27.8	86	27.7	
Fruit	75	38.4	41	35.7	116	37.4	
Milk/Yogurt	8	4.1	4	3.5	12	3.9	p=0.396
Nuts	22	11.3	16	13.9	38	12.3	
Egg	-	0.0	1	0.9	1	0.3	
Çiğ Köfte	4	2.1	2	1.7	6	1.9	
Pasta	8	4.1	2	1.7	10	3.2	

[a]:Chi square test, n:Number of Participants, %:Percent

When the relationship between gender and the food consumed before bed is examined, fruit, chips/biscuits/crackers, pasta, and milk/yogurt consumption ratios of the women were found 38.4% (n=75), 38.4% (n=75), 27.7% (n=54), 4.1% (n=8), and 4.1% (n=8) respectively. While only 1.7% (n=2) of men eat raw meatballs before night, the rate of those who consume fruit is 35.7%3 (n=41) and chips, biscuits, and crackers are 27.8% (n=32). There was no significant relationship between gender and the last meal before the night (p>0.05) (Table 4).

While 47.3% (n=227) of the study participants were below 7 points with insufficient adherence, 27.1% (n=130) were in the range of 7-8 points with acceptable adherence, and 25.6% (n=123) had strict adherence and was found over 9 points. The distribution of the MEDAS scale scoring of the participants by gender is given in Table 5. According to the table, the MEDAS strict adherence (≥9) score was found to be 82.9% (n=102) and 17.1% (n=21) higher in women than in men. MEDAS scores according to gender were statistically significant (p<0.05) (Table 5).

Table 5: Mediterranean Diet Adherence Scale (MEDAS) of participants by gender

	Insufficient Adherence (<7)		Acceptable Adherence (7-8)		Strict Adherence (≥9)		P-value[a]
	n (227)	% (100)	n (130)	% (100)	n (123)	% (100)	
Female	137	60.4	92	70.8	102	82.9	p=0.01
Male	90	39.6	38	29.2	21	17.1	

[a]:Chi square test, n:Number of Participants, %:Percent

In Table 6, 54.2% (n=260) of the participants stated that their sleep quality was quite good, while 7.7% (n=37) reported that their sleep quality was very poor. The ratio of 44.4% (n=213) of the participants reported that their sleep latency, that is, the time to fall asleep, was longer than 30 minutes. It was determined that 53.1% (n=255) of the participants slept more

than 7 hours, and 46.9% (n=225) slept less than 7 hours. Most of the study participants (84.8%, n=407) were found to have habitual sleep efficiency above ≥85%. When evaluated in terms of sleep disturbance, it was determined that 31.5% (n=151) experienced sleep disturbance less than 1 and 1-2 times a week. It was observed that many of the participants (92.7% n=92.7%) did not use sleeping pills. While 15.2% (n=73) of the participants stated that they had great problems regarding the dysfunction they experienced during the day, 21.9% (n=105) stated that they had no problems at all. The PSQI score of 60.2% (Male: 55.7%; Female: 62.2%) of all participants was found to be poor (≥5 points) (p>0.05).

The minimum PSQI score seen in the participants is 1, and the maximum PSQI score is 15. The mean total PSQI score is 6.29±3.06, the average PSQI score of women is 6.33±2.93 while the average PSQI score of men is 6.19±3.36. There is significant difference between the PSQI scores of women and men (p=0.05).

Table 6: Comparison of PSQI Sleep Quality Index Components with PSQI scores

PSQI Components	PSQI Scores							
	0		**1**		**2**		**3**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Subjective Sleep Quality	26	5.4	260	54.2	157	32.7	37	7.7
Sleep Latency	108	22.5	159	33.1	213	44.4	-	0.0
Sleep Time	255	53.1	225	46.9	-	0.0	-	0.0
Habitual Sleep Activity	407	84.8	37	7.7	25	5.2	11	2.3
Sleeping disorder	105	21.9	151	31.5	151	31.5	73	15.2
Sleeping Pill Use	445	92.7	17	3.5	12	2.5	6	1.3
Daytime Dysfunction	105	21.9	151	31.5	151	31.5	73	15.2

Sleep Quality and Score	Female		Male		Total		P-value[a]
	n	**%**	**n**	**%**	**n**	**%**	
Poor sleep quality >5 points	206	62.2	83	55.7	289	60.2	p=0.284
Good sleep quality <5 points	125	37.8	66	44.3	191	39.8	

PSQI score	Female		Male		Total		P-value[a]
	X±SD	**Lower-Upper**	**X±SD**	**Lower-Upper**	**X±SD**	**Lower-Upper**	
	6.33±2.93	1-13	6.19±3.36	1-15	6.29±3.06	1-15	p=0.05

[a]:Chi square test, n:Number of Participants, %:Percent

4. DISCUSSION

A ratio of 91.3% (n=136) of the male participants and 97.0% (n=321) of the female participants said they drank caffeinated beverages. Consumption of beverages containing caffeine according to gender was found to be statistically insignificant (p>0.05). This suggests that in the study conducted by Balcı (2017), there was no significant difference in the prevalence of caffeine consumption between male and female participants, as indicated by the p>0.05.

When the main meal consumption habits are examined by gender, 49.9% of women (n=165) had 3 main meals, 48.0% (n=159) had 2 main meals and 47.0% of men (n=70) had 2 and 3 main meals is a habit. There was no statistically significant difference between the average number of snacks consumed per day and gender (p>0.05). In the study by Kızıl Ekinci (2019), it was determined that 23.3% of women have three main meals and 24.8% of men have

three main meals a day. No statistically significant relationship was found between the average number of main meals per day and gender (p>0.05). It was determined that 47.8% of men (n=55) did not have the habit of snacking according to gender. There was no statistically significant difference between the average number of snacks consumed per day and gender (p>0.05). Nowadays, with the increase in easy access to food, the possibility of people making healthy food choices also increases. To encourage them to choose healthier products, it is important to provide nutrition education programs and create a supportive environment that encourages healthy choices.

When the snack consumption habits were examined by gender, it was determined that 45.1% of women (n=128) and 47.8% of men (n=55) did not have the habit of having snacks. There was no statistically significant difference between the average number of snacks consumed per day and gender (p>0.05). Balcı (2017) found that 12.5% of women and 17.5% of men do not have the habit of having snacks (p>0.05). While 54.1% (n=216) of the participants stated that skipping meals was due to lack of time, 27.1% (n=108) stated that it was due to not having a habit. The reason for skipping meals according to gender was found to be statistically insignificant (p>0.05) which was similar to the results of (Kızıl Ekinci, 2019) study. In a study, the most common reason for skipping meals for all participants was found to be a sleep disorder. In another study, the most common reason for skipping meals was 47.9% lack of appetite and 27.1% lack of time (Deniz, 2021). It is believed that living conditions are the cause of individuals skipping meals, even though research indicates that this is because they lack time.

When the distribution of foods consumed before bedtime is examined by gender; It was determined that both genders preferred fruit the most (female: 38.4%; male: 35.7%), and it was not found statistically significant between gender and the foods preferred while lying down (p>0.05). In the study conducted by Balcı (2017), it was determined that both genders (female: 43.6%; male: 60%) preferred sandwiches before going to bed. There was no significant difference between gender and the food consumed before bedtime (p>0.05). Briefly, although the foods preferred before going to bed vary according to individuals and gender, the important thing is to ensure that people make healthy food choices. Training can be given on this subject.

The MEDAS insufficient adherence (<7) score of the participants in the study was determined as 60.4% (n=137) for women and 39.6% (n=90) for men. The MEDAS scores according to gender were statistically significant (p<0.05). Deniz (2021) found that 70% (n=21) of the female participants and 69.6% (n=16) of the male participants were below 7 points, which is insufficient adherence. It was found that there was no significant difference between MEDAS scores according to gender (p>0.05). (Malakieh et al., 2022, pp.1033-1044)found the mean MEDAS score was 7.59 ± 2.22 in their study on 326 Lebanese adults, which reflects acceptable adherence. In the study conducted on 1,197 adult volunteers, the MEDAS score was determined as 6.68 ± 2.49. When the subjects were compared as morning (7.55 ± 2.66), afternoon, and evening (6.75 ± 2.45 and 5.84 ± 2.30 respectively), the MEDAS score was found to be statistically significant between the groups (p<0.05) (Yalcin and Ozturk, 2023, pp.1-8). In summary, the findings suggest that the adherence to the Mediterranean diet, as measured by MEDAS scores, can vary between different studies and populations. Gender differences in MEDAS scores were found to be statistically significant in some studies but not in others. Additionally, the timing of meals may also impact MEDAS scores in certain populations, as indicated by Yalcin and Ozturk (2023).

In the study, the mean PSQI score was 6.29±3.06, the mean PSQI score of women was 6.33±2.93, while the mean PSQI score of men was 6.19±3.36. There was no statistically significant difference between the PSQI scores of women and men (p>0.05). In a similar study, the mean total PSQI score was 6.7±3.5, the mean PSQI score of women was 6.9±3.4, while the mean PSQI score of men was 6.3±3.6. (Şenol et al., 2012, pp.93-102), (Balcı, 2017), (Kızıl Ekinci, 2019) and (Bozkul and Karakul, 2023, pp.13-22) also reported that there was no difference between men and women in terms of PSQI scores. In the study conducted by (Üstün and Çınar Yücel, 2011, pp.29-39) to examine the sleep quality of nurses; PSQI total score averages were determined as 5.96±2.90, and 50.5% of them were found to have poor sleep quality. (Javed et al., 2023, pp.12-17) found that the minimum PSQI score was 0, the maximum PSQI score was 18, and the PSQI average score was 7.40±3.42 in their study on medical school students. (Lodewijks et al., 2023, pp.279-283) evaluated sleep quality before and after bariatric surgery; the preoperative PSQI score was 6.1±3.7, 4.8±3.5 within 1.5 years of the operation, and 6.1±4.4 1.5 years after the operation. PSQI score before and after bariatric surgery was statistically significant (p<0.05). The findings suggest that there is no significant difference in PSQI scores between men and women in various studies. However, sleep quality may vary among different populations and may be influenced by factors such as occupation (e.g., nurses) and medical conditions (e.g., before and after bariatric surgery). The study explores various aspects of university students' lifestyles, adherence to the Mediterranean diet, and sleep quality. It provides insight into the relationships between these factors. There appear to be educational needs regarding individual differences in food and sleep preferences and their effects on daily activities.

5. CONCLUSIONS

Healthy eating and adequate sleep are the two most crucial human needs. It's important to maintain healthy levels of sleep quality at an acceptable level. According to the study, university students' adherence to the Mediterranean diet was found to be low, as well as their attitudes toward healthy eating. In the context of healthy eating habits, the Mediterranean diet is important in terms of the balanced distribution of macro and micronutrients. Additionally, university students' sleep quality should be improved by extending bedtime, morning wake-up, and sleep hours. Students in higher education should adopt a regular diet and sleep schedule.

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