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Investigation of Changes in Nutrition/Eating Habits and Physical Activity Status of Nursing Students in the COVID-19 Period and Determination of Vaccination Status

Hemşirelik Öğrencilerinin COVID-19 Döneminde Beslenme/Yeme Alışkanlıkları ve Fiziksel Aktivite Durumlarındaki Değişikliklerin Araştırılması ile Aşı Durumlarının Belirlenmesi

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ABSTRACT

In this study, it was aimed to examine the changes in the nutrition/eating habits and physical activity status of nursing students during the coronavirus disease 2019 (COVID-19) period and to determine the vaccination status of the students. In this descriptive cross-sectional study, 324 students studying at the Faculty of Health Sciences Nursing Department of a university and selected by random sampling method were included. Descriptive statistics (frequency, percentage) and chi-square test were used in the analysis of the data collected through the online survey. Due to the COVID-19 pandemic, an online questionnaire was prepared in the "Google form" application and students were provided to fill it voluntarily. It was determined that 123 (31.8%) of the students had COVID-19. It was determined that there were 258 (79.6%) students who were voluntarily vaccinated, 56 (17.3%) vaccinated against their own will, and 10 (3.1%) students who were not vaccinated. 276 (85.2%) students with BioNTech vaccine and 38 (11.7%) students with Sinovac vaccine were identified. 246 (75.9%) students who received two doses of vaccine, 40 (12.3%) students who received one dose of vaccine and 28 (8.6%) students who received three doses of vaccine were identified. When male and female students were compared based on body mass index in terms of maintaining their body weight, weight gain was observed in males. Although there was a decrease in physical activities and an increase in insomnia problems during the pandemic period, there was no increase in the rates of smoking and alcohol use.

Keywords: COVID-19, Nursing students, Nutrition, Physical activity, Vaccine.

ÖZ

Bu çalışmada hemşirelik öğrencilerinin koronavirüs hastalığı 2019 (COVID-19) döneminde beslenme/yeme alışkanlıkları ve fiziksel aktivite durumlarında meydana gelen değişikliklerin incelenmesi ile öğrencilerin aşı durumlarının belirlenmesi amaçlanmıştır. Tanımlayıcı kesitsel tipteki bu araştırmaya, bir üniversitenin Sağlık Bilimleri Fakültesi Hemşirelik Bölümünde öğrenim gören ve rastgele örnekleme yöntemiyle seçilen 324 öğrenci dahil edilmiştir. Çevrimiçi anket yoluyla toplanan verilerin analizinde tanımlayıcı istatistikler (frekans, yüzde) ve ki-kare testi kullanılmıştır. COVID-19 pandemisi nedeniyle "Google form" uygulamasında çevrimiçi anket hazırlanmış ve öğrencilerin gönüllü olarak doldurmaları sağlanmıştır. Öğrencilerin 123'ü (%31.8) COVID-19 geçirmiştir. Kendi isteğiyle aşılanan 258 (%79.6), kendi isteği dışında aşılanan 56(%17.3), aşı olmayan 10 (%3.1) öğrenci bulunmaktadır. BioNTech aşısı olan 276 (%85.2) öğrenci, Sinovac aşısı olan 38 (%11.7) öğrenci saptanmıştır. İki doz aşı yapılan 246 (%75.9), bir doz aşı yapılan 40 (%12.3) ve üç doz aşı yapılan 28 (%8.6) öğrenci vardır. Erkek ve kız öğrenciler vücut ağırlıklarını koruma açısından beden kitle indeksi bazında karşılaştırıldığında, erkeklerde kilo artışı gözlenmiştir. Pandemi döneminde fiziksel aktivitelerde azalma ve uykusuzluk problemlerinde artış olmasına rağmen sigara ve alkol kullanım oranlarında artış olmamıştır.

Anahtar Kelimeler: COVID-19, Hemşirelik öğrencileri, Beslenme, Fiziksel aktivite, Aşı.

The study was approved by the Siirt University Non-Interventional Clinical Research Ethics Committee (2022/01-02). The abstract text of the study was presented as an oral presentation at the II. International Siirt Conference on Scientific Research.

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) is a pandemic that has affected the whole world. When the first case was seen in Turkey on March 11, 2020, the World Health Organization (WHO) declared it a pandemic. When the COVID-19 outbreak was declared a pandemic by the WHO, it was reported that there were over 118.000 cases and 4291 deaths in 114 countries.[1] As a result of the measures taken to control the development of the pandemic, dietary patterns, physical activity levels, consumer behaviors, education-teaching methods, and daily living are changing rapidly.[2] With the COVID-19 outbreak, all states in the world have gone to different applications and the length of stay of the majority of individuals has increased with various restrictions.[3] Infection is transmitted by droplets produced by coughing and sneezing by symptomatic patients, but transmission can also occur from asymptomatic individuals and before the onset of symptoms.[4] For this reason, all countries impose quarantine conditions on sick individuals to reduce the spread of the virus and recommend social isolation practices for healthy people to avoid the disease. These two methods are two measures that can prevent or at least minimize the impact of infectious disease outbreaks.[5] Since quarantine causes the person to stay away from his daily routine life, it causes both a change in mood and a more sedentary life. The increase in the time spent at home, the news of the pandemic that is constantly listened to and watched, the increasing anxiety, the increase in the desire to consume food due to the mood and the decrease in physical activity can cause undesirable increases in body weight. It is extremely important to have the right behaviors in nutrition to both provide weight control and keep immunity strong. Although no food or drink prevents or treats the transmission of COVID-19 disease, it has been proven that a healthy and balanced diet, along with physical activity and regular sleep, strengthen the immune system.[6] A diet devoid of protein and energy lowers immunity against diseases and increases the risk of infectious diseases. To combat COVID-19 at the individual level, the relationship between nutrition and immunity should be known. Consideration should be given to healthy eating habits to reduce COVID-19 susceptibility and its long-term complications, as nutrients can affect the immune system through activation of cells and gene expression, are important determinants of gut microbial composition, and nutritional deficiencies are associated with increased susceptibility to infection.[7] In case follow-up studies, it has been observed that low plasma prealbumin level, which is one of the indicators of malnutrition, accelerates respiratory failure and the transition to mechanical ventilation in patients with Severe Acute Respiratory Syndrome-Coronavirus 2.[8] For this reason, it is very important to comply with the principles of healthy eating during quarantine periods and normal times. Likewise, it is known that increasing physical activity during quarantine and normal times is very important for staying healthy and increasing body immunity. Healthcare professionals take an active part in health protection and development programs and assume great responsibilities in the fight against coronavirus during the pandemic period. To ensure the continuity of their professional responsibilities and health care during the pandemic, health workers need to continue physical activity at home to stay healthy and to maintain immune system function.[9] Nurses are healthcare workers with a high risk of infection, fighting the coronavirus on the front line. In order for the people who make up the society to lay the foundations of a healthy life, individuals' making physical activity one of the foundations of their lives during their student years will leave a lasting impact in the coming years. In this sense, students' perception of healthy lifestyle behaviors and their implementation in their lives will improve social health as well as a healthy life perspective.[10]

This study was carried out with the aim of investigating the changes in the nutrition/eating habits and physical activity status of nursing students during the COVID-19 period and determining the vaccination status.

MATERIAL AND METHOD

This research was modeled as a descriptive cross-sectional survey to investigate the changes in the nutrition/eating habits and physical activity status of nursing students during the COVID-19 period and to determinate the vaccination status. The study was approved by the Non-Interventional Clinical Research Ethics Committee (2022/01-02).

Population and Sample

The population of the research consists of 1100 students studying at the Faculty of Health Sciences, Nursing Department of a state university in the Southeastern Anatolia Region in the fall semester of the 2021-2022 academic year. The simple random sampling method was used to determine research sample. In simple random sampling, the probability of all individuals being selected is equal and since the selection of one individual does not prevent the selection of other individuals, this sampling method was preferred.[11] The formula

$$n = \frac{N\frac{Z^2 p\,(1-p)}{e^2}}{\left[N-1+\frac{Z^2 p\,(1-p)}{e^2}\right]}$$

was used to determine the sample size to represent the universe in the research.[12] In the formula; N: Population size, Z: Standard normal value corresponding to 95% confidence level, e: Error tolerance, and p(1-p): It shows the expected maximum variance. In this context, it was decided that the minimum sample size that could represent the universe at 0.05 margin of error and 95% confidence level should be at least 285. Considering the data losses, more students (324) were reached. Of these students, 179 are female and 145 are male.

Data Collection Tools and Process

In order to collect data in the research, a "Personal Information Form" was prepared to determine some demographic characteristics of the students. In addition, the "Food Consumption Frequency Form and Physical Activity Record Form" available in the literature were revised and used in order to determine the nutritional and physical activity status of the students. A 5-point Likert-type scale (1: Strongly disagree, 2: Disagree, 3: Undecided", 4: Agree, 5: Strongly agree) was used. The questionnaire was revised in line with the purpose of the research in line with the opinions of three experts in the field and applied to the students online on a voluntary basis. For this research data, the Cronbach alpha reliability coefficient of the questionnaire was calculated as .91. Some of the items in the scale are as follows; "During the outbreak, my weight increased", "My diet has changed during the outbreak", "I had sleep problems during the outbreak".

Due to the COVID-19 pandemic, the online questionnaire was prepared in the "Google Form" application and students were provided to fill it on a voluntary basis. After the students filled out the online questionnaire, the study data was added to the "Microsoft Excel Worksheet" with the help of the Google Form feature. The obtained data were analyzed under the research problems.

Analysis of Data

The data were analyzed in the IBM SPSS 24.0 statistical package program. Descriptive statistics such as frequency and percentage were used to analyze data on students' demographic information, nutrition/eating habits, physical activity and vaccination status, and the relationship between categorical variables was analyzed with the chi-square test. On the other hand, the height and body weight measurements of the students were taken based on the statements they gave to the questionnaire. Body Mass Index (BMI) (kg/m^2) groups were calculated by dividing body weight (kg) by the square of height (m^2) of the students. Calculated

values were evaluated according to the BMI classification of the World Health Organization (Underweight: under 18.5; normal weight: between 18.5-24.9; overweight: between 25-29.9; obese: 30 and over). Then, the chi-square test was used to analyze whether there was a relationship between the BMI groups according to the gender of the students.

FINDINGS AND DISCUSSION

The findings of the study were analyzed in four sections. Respectively, some demographic information of the students participating in the study, COVID-19 and vaccination status, food consumption status during the outbreak, main/snack consumptions before the outbreak and during the isolation period, supplementary food/vitamin support status and purposes of use, finally before and during isolation. Findings related to physical activity or exercises performed during the period are included.

Findings Related to Some Demographic Information of Students

Descriptive statistics such as frequency and percentage related to some demographic information of the students participating in the research were calculated. The obtained results are given in Table 1.

Of the 324 students included in the study, 179 (55.2%) were female and 145 (44.8%) were male. When the highest frequencies (frequency) are examined among the demographic characteristics; the number of students studying in the first grade included in the study is 143 (44.1%) more than the number of students studying in other grades. 139 (42.9%) students took nutrition course, 185 (57.1%) did not take nutrition course. According to the frequency of smoking and alcohol use, it is seen that 269 (83.0%) of the students do not smoke, 309 (95.4%) do not consume alcohol, and 289 (89.2%) students do not have any chronic diseases. While 31 (9.6%) of the students were underweight, 238 (73.5%) were at normal weight, 48 (14.8%) were overweight, and 7 (2.2%) of students were obese. 202 (62.4%) students between the ages of 19-21 were higher than the others.

Table 1. Descriptive Statistics on Some Demographic Information of the Students (n=324)

Demographic features		f	%
Gender	Female	179	55.2
	Male	145	44.8
BMI (kg/m^2)	Underweight (<18.5)	31	9.6
	Normal weight (18.5-24.9)	238	73.5
	Overweight (25.0-29.9)	48	14.8
	Obese (≥30)	7	2.2
Age	19-21	202	62.4
	22-24	92	28.4
	25 ≤	30	9.3
Class	1st grade	143	44.1
	2nd grade	61	18.8
	3rd grade	43	13.3
	4th grade	77	23.8
Status of taking a nutrition lesson	Yes	139	42.9
	No	185	57.1
Smoking status	Yes	55	17.0
	No	269	83.0
Alcohol use status	Yes	15	4.6
	No	309	95.4
Chronic disease status	Yes	35	10.8
	No	289	89.2

*Note. f: Frequency, %: Percent

The prevalence of being overweight 36 (24.8%) and obese 5 (3.4%) in men was significantly higher than that of women being overweight 11 (6.1%) and obese 2 (1.1%).

Findings on Students' COVID-19 and Vaccine Status

Some descriptive statistics were calculated, such as the cases of having COVID-19 and being vaccinated, the type and dose of vaccine, the frequency and percentage of the reasons for not being vaccinated. The obtained results are given in Table 2.

Table 2. Descriptive Statistics on Students' COVID-19 Transmission and Vaccination Status

		f	%
COVID-19 status	Yes	123	31.8
	No	221	68.2
State of being vaccinated	Yes, I was vaccinated voluntarily.	258	79.6
	Yes, I was vaccinated against my will.	56	17.3
	No, I'm not vaccinated	10	3.1
Which vaccine	Sinovac	38	11.7
	BioNTech	276	85.2
	I was not vaccinated	10	3.1
How many doses of vaccine	1 dose	40	12.3
	2 doses	246	75.9
	3 doses	28	8.6
	I was not vaccinated	10	3.1
Your reason for not getting vaccinated	I'm vaccinated	286	88.3
	Avoiding side effects	21	6.5
	Some news in communication organs	4	1.2
	Have had the illness	6	1.9
	Other	7	2.2

*Note. f: Frequency, %: Percent

When Table 2 is examined, it is seen that 123 (31.8%) of the students have had Covid and 221 (68.2%) have not had Covid. There are 258 (79.6%) students who were vaccinated voluntarily, 56 (17.3%) students who were vaccinated against their will, and 10 (3.1%) students who were not vaccinated. There were 276 (85.2%) people who had BioNTech vaccine and 38 (11.7%) who got Sinovac vaccine. There are no students who have the Turkovac vaccine. There were 246 (75.9%) students who received two doses of vaccine, 40 (12.3%) students who were given one dose of vaccine, and 28 (8.6%) students who received three doses of vaccine. In addition, 21 (6.3%) of the students were afraid of its side effects, 6 (1.9%) of them had the disease, 4 (1.2%) of the news in the communication organs, 7 (2.2%) He also stated that he was not vaccinated for other reasons.

Findings on the Food Consumption Status of Students during the Pandemic Period

Some descriptive statistics such as frequency and percentage related to the food consumption status of the students during the pandemic period were calculated. The obtained results are given in Table 3.

Table 3. Descriptive Statistics of Food Consumption during the Pandemic Period

Nutrients	Change	f	%
Pastries (bread, pastries, pastries, etc.)	Consumption increased	115	35.5
	Consumption decreased	61	18.8
	Consumption has not changed	148	45.7
Meat products (salami, sausage, sausage, etc.)	Consumption increased	79	24.4
	Consumption decreased	98	30.2
	Consumption has not changed	147	45.4
Desserts (chocolate, cake, etc.)	Consumption increased	113	34.9
	Consumption decreased	81	25.0
	Consumption has not changed	130	40.1
Fries	Consumption increased	89	27.5
	Consumption decreased	94	29.0
	Consumption has not changed	141	43.5
Fresh and dried fruits	Consumption increased	127	39.2
	Consumption decreased	73	22.5
	Consumption has not changed	124	38.3
Packaged foods (biscuits, chips, etc.)	Consumption increased	113	34.9
	Consumption decreased	99	30.6
	Consumption has not changed	112	34.6
Frozen foods (Prepared pizza, instant ravioli, ice cream, etc.)	Consumption increased	78	24.1
	Consumption decreased	108	33.3
	Consumption has not changed	138	42.6
Nuts	Consumption increased	125	38.6
	Consumption decreased	80	24.7
	Consumption has not changed	119	36.7
Fizzy drinks	Consumption increased	76	23.5
	Consumption decreased	119	36.7
	Consumption has not changed	129	39.8

*Note. f: Frequency, %: Percent

When the food consumption status during the pandemic period given in Table 3 is examined, it is seen that 148 (45.7%) student pastries group, 147 (45.4%) student meat products group, 130 (40.1%) student dessert group, 141 students (43.5%) stated that "consumption did not change" in the fries group, 138 (42.6%) in the frozen foods group and 129 (39.8%) in the carbonated drinks group. Food groups with high consumption; 127 (39.2%) mostly fresh and dried fruits, 113 (34.9%) packaged foods and 125 (38.6%) dried fruits.

Findings of Students' Main/Snack Information before the Pandemic and during Isolation

Some descriptive statistics, such as frequency and percentage, were calculated regarding number of daily eating occasions students before the pandemic and during isolation. When the statistics on the number of main/snack meals are examined before the pandemic and during the isolation, it is seen that the number of those who consumed three snacks during the isolation increased compared to the number of those who consumed three snacks before the pandemic. Likewise, the number of those who consumed three main meals during isolation increased compared to the number of those who consumed three main meals before the pandemic. However, the number of people who consumed two snacks during isolation increased compared to the number of those who consumed two snacks before the pandemic. According to these findings, it was observed that the food consumption of the students increased during the isolation they stayed at home during the pandemic.

Findings of Students' Knowledge such as Inactivity and Psychological State during the Pandemic Period

Some descriptive statistics, such as frequency and percentage, of the answers given by the students included in the study to the questions about inactivity, psychological state, diet, nutrition expenses, cigarette-alcohol use, etc. during the pandemic were calculated. The obtained results are given in Table 4. According to Table 4, it was determined that the sleep patterns of most of the students participating in the study changed during the pandemic period (117+85). In the study, it is seen that the number of students (83+71) who had sleep problems during the pandemic was higher than the number of students who did not have sleep problems (57+71).

Table 4. Distribution of Students' Knowledge such as Inactivity, Psychological State, Cigarette-Alcohol Use during the Pandemic Period

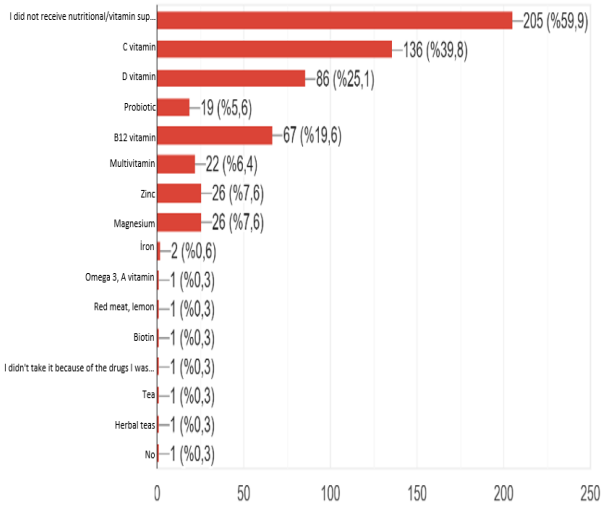
	Average	1		2		3		4		5	
		f	%	f	%	f	%	f	%	f	%
Inactivity during the pandemic had a negative impact on my health.	3.53	42	13.0	45	13.9	36	11.1	129	39.8	72	22.2
The psychological state during the pandemic increased my desire to eat	3.18	59	18.2	88	27.2	39	12.0	92	28.4	46	14.2
My sleep pattern has changed during the pandemic	3.57	44	13.6	48	14.8	30	9.3	117	36.1	85	26.2
During the pandemic, my weight increased	3.02	60	18.5	91	28.1	43	13.3	77	23.8	53	16.4
My diet has changed during the pandemic.	3.31	52	16.0	62	19.1	44	13.6	92	28.4	74	22.8
During the pandemic, my consumption of ready-made food increased	2.85	68	21.0	87	26.9	49	15.1	77	23.8	43	13.3
During the pandemic, my consumption of tea, coffee, acidic beverages increased	3.13	62	19.1	77	23.8	38	11.7	91	28.1	56	17.3
I had sleep problems during the pandemic	3.22	57	17.6	71	21.9	42	13.0	83	25.6	71	21.9
During the pandemic, my nutrition expenses increased	3.26	59	18.2	59	18.2	47	14.5	98	30.2	61	18.8
During the pandemic, my smoking and alcohol consumption increased	1.89	172	53.1	58	17.9	28	8.6	38	11.7	28	8.6

*Note. 1: Strongly disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly agree

Findings Regarding the Dietary Supplements Status Used and Their Intended Use

Information on the nutritional/vitamin supplement status used by the students during the pandemic period is given in Graph

1. According to Graph 1, 205 (59.9%) students did not receive nutritional/vitamin supplements during the pandemic period.



Graph 1. Supplementary Nutrient/Vitamin Supplement Situations Used

In order, according to high frequency values; 136 of the students (39.8%) were vitamin C, 86 (25.1%) were vitamin D, 67 (19.6%) were vitamin B12, 26 (7.6%) were Magnesium, 26 (7.6%) Zinc, 22 (6.4%) Multivitamin, 19 (5.6%) Probiotic, 2 (0.6%) Iron food/vitamin supplement. The rest 7 (2.1%) are students who often tick more than one option.

Findings Regarding Physical Activity or Exercises Performed before and during the Isolation Period

The findings regarding the physical activities or exercises that the students did before and during the isolation period were examined. From these findings, it is seen that 96 (28.1%) students did not do physical activity or exercise before the isolation and 116 (33.9%) students did not do any physical activity or exercise during the isolation period. According to the high frequency values, 228 (66.7%) of the students were walking, 66 (19.3%) gardening, 64 (18.7%) jogging, 30 (8.8%) before isolation. swimming, the remainder did other physical activities or exercises with low frequencies. On the other hand, during the isolation period, 147 (43%) of the students were walking, 32 (9.4%) were gardening, 18 (5.3%) were jogging, 14 (4.1%) were swimming and walking. the rest did other physical activities or exercises with low frequency.

The COVID-19 pandemic has shattered basic notions about human life in communities all across the planet.[13] In this study, it is seen that 123 (31.8%) of the students have had COVID-19, and 221 (68.2%) have not had COVID-19. There are 258 (79.6%) students who were vaccinated voluntarily, 56 (17.3%) students who were vaccinated against their will, and 10 (3.1%) students who were not vaccinated. The students mostly preferred BioNTech vaccine 276 (85.2%) and Sinovac vaccine 38 (11.7%). In addition, 21 (6.3%) of the students were afraid of the side effects of the vaccine, 6 (1.9%) of them had the disease, 4 (1.2%) of them due to some news in the communication organs, and 7 (2.2%) stated that they were not vaccinated for other reasons. Most of the students in our study were vaccinated. Clear grounded opposition to vaccination was not observed among all students or genders. In a study was seen, being a woman, not wanting to be vaccinated, and thinking that the vaccine will not affect the disease incidence are variables that increase the fear of COVID-19.[14] Quarantine might lead to more sedentary behavior, bad food habits, and social isolation. Because daily habits have been interrupted, it is vital to establish healthy coping methods to deal with the stress. Despite the effects of COVID-19 on normalcy, people should continue to strive for healthy lifestyles by exercising at home, cooking good foods, and maintaining contact with loved ones.[15] Adolescents were obliged to stay indoors due to the imposition of social isolation standards as a result of the COVID-19 pandemic, causing significant stress and uncertainty in their life. This could have made adolescents more prone to overeating and a sedentary lifestyle. As a result, it's assumed that teenagers' willpower suffers and their weight-control self-efficacy suffers.[16]

In this study, there is a situation that we think is caused by the nutritional habits of the pandemic period. It was found that there was

a statistically significant difference especially between the genders of the students and the significantly higher than in men 98 (67.6%). The prevalence of being overweight 36 (24.8%) and obese 5 (3.4%) in men was significantly higher than that of women being overweight 11 (6.1%) and obese 2 (1.1%). Less social relations and activities that female students are accustomed to in traditional cultural environments did not have a negative effect on women, but on the contrary, it showed a negative effect on men. 67.3 percent of university students noticed a difference in their body weight during the social isolation period. 53.7 percent of those surveyed reported gaining weight. Before the pandemic, 66.8% of students were physically active, but this dropped to 37.9% during the social distancing phase. Obesity prevalence was 23.2 % and 8.7 % two weeks before social isolation, respectively, and increased to 28.2 % and 10.7 %, respectively, after social isolation. Because of their fear and suffering as a result of the pandemic, 30.5 % of the participants reported eating more processed and ultra-processed foods.[17] Data from a total of 827 participants was used in a German study. Almost half of the students said they had gained or lost weight, with roughly 27% saying they had gained weight and 22% saying they had lost weight.

Consumption variations in the following food groups were found to be predictive of weight changes in regression analyses: fruits, sweets and cakes, bread and bakery items, pasta, savory snacks, and meats and sausages. Additionally, weight changes were predicted by changes in the frequency of cooking with fresh items, physical activity, exercise, smoking, and alcohol intake, as well as pre-lockdown BMI.[18] A increased intake of fruits and vegetables, beans, eggs, salmon, and yogurt before and during the lockdown period, as well as a decrease in alcoholic beverage consumption. There was also a decrease in sleep quality, as well as an increase in working hours and sitting time.[19]

In this study, the food groups whose consumption is increased with high frequency; 127 (39.2%) mostly fresh and BMI groups ($p<0.01$). The frequency of normal weight 141 (78.8%) in women is dried fruits, 113 (34.9%) packaged foods, and 125 (38.6%) dried fruits. These foods are high in carbohydrates and fats. We think that these foods have effects on students' weight gain together with sedentary life. Over a quarter of the students were obese or overweight. During COVID-19, the majority of kids had nutritional problems, only one-third of the students were moderately physically engaged, and the majority of students were stressed. According to multivariate analysis, the danger of stress raises the risk of weight gain by 2.4 [95% CI 1.09–5.43], whereas inadequate physical activity increases the risk by 1.9 [95% CI 1.18–3.04]. A balanced diet, on the other hand, protects against weight increase (ORa = 0.30, [95% CI 0.15–0.61]).[20] The COVID-19 pandemic has had a variety of effects on families with obese children. The experiences of such parents shed light on the difficulties that parents have in managing their children's weight, especially at such trying times.[21] With this study, it was determined that most of the students' sleep patterns changed during the pandemic period (117+85). It is seen that the number of students who have sleep problems during the pandemic (83+71) is higher than the number of students who do not have sleep problems (57+71). The subjects who increased their inactive hours and decreased their sleep a greater amount gained more weight. Sleep duration, physical activity (sedentarism), and light were the most important determinants in body weight change during confinement (timing of screen exposure).[22] Sleep difficulties are typical during the COVID-19 pandemic. Four out of ten people have a sleep problem, with sleeplessness being the most common complaint. COVID-19-infected patients, as well as children and adolescents, appeared to be the most affected. The general population appeared to be the least impacted, whereas healthcare workers, special populations, and university students had similar but somewhat lower rates of sleep disruptions. Lockdown is linked to a greater number of sleep

disruptions.[23] Before the COVID-19 pandemic, 12.9 % of participants got free school lunches, but their food security deteriorated as a result of school closures during the pandemic. The majority of participants' lifestyles were affected in several ways: 48.8% ate the same amount, 45.1 % slept more, 53.7 % exercised the same amount, and 61.0 % spent less time outside. Almost half of the participants (43.4%) said the COVID-19 pandemic had a negative overall influence on their lives, although 19.7% and 6.7 % said they were very content with their lifestyles, and 84.3 % said they had minimal or minor stress and worry. Surprisingly, those who said the social isolations had a favorable influence (25.0 %) said they suited their introverted lives, such as spending more time indoors and having fewer or no social interactions in person.[24] During the confinement, university students dropped moderate (29.5%) and vigorous (18.3%) physical activity while increasing inactive time (+52.7%). They did, however, devote more time to high-intensity interval training (HIIT) (+18.2%) and mind-body activities (such as yoga) (+80.0%). Women fared better than men in terms of adjusting to confinement in terms of physical activity.[25] In order according to high frequency values in this study; 136 of the students (39.8%) had been received vitamin C, 86 (25.1%) vitamin D, 67 (19.6%) vitamin B12, 26 (7.6%) magnesium, 26 (7.6%) zinc, 22 (6.4%) multivitamin, 19 (5.6%) probiotic, and 2 (0.6%) iron supplementation. Higher vitamin D3 doses may be beneficial in the treatment of persons who become infected with COVID-19.[26] Vitamin D supplementation, according to another study, may aid improve resistance to respiratory infections, especially when taken daily.[27] We observed that in this study, according to the high-frequency values, 228 (66.7%) of the students were walking, 66 (19.3%) gardening, 64 (18.7%) jogging, 30 (8%) 8) swimming, the rest did other physical activities or exercises with low frequencies. On the other hand, during the isolation period, 147 (43%) of the students were walking, 32 (9.4%) were gardening, 18 (5.3%) were jogging, and 14 (4.1%) were swimming and walking. The rest did other physical activities or exercises with low frequency. A study was done among Swiss university of applied science students and employees, differences in physical activity (PA), sitting time, and between different divisions of health professionals, as well as between Bachelor of Science students, Master of Science students, and employees, a median modified Mediterranean Diet Score (mMDS) was observed.[28] During the COVID-19 pandemic, positive food purchase, preparation, and consumption habits were identified mostly in subgroups of teenagers who reported lower body mass or increased physical activity. It's possible that physical activity might help encourage favorable eating changes, and that when positive dietary adjustments are combined with increased physical activity, it can help teenagers lose weight.[29] During the COVID-19 quarantine period, participation time at all levels of physical activity dropped, but sedentary behavior increased. Additionally, during quarantine, nutritional patterns among college-aged students shifted, with increased meals at home, higher alcohol drinking, and decreased fruit consumption.[30]

CONCLUSIONS AND SUGGESTIONS

In this study, when male and female students were compared based on BMI in terms of maintaining their body weight, weight gain was observed in males. The vast majority of students had the COVID-19 vaccine shot. Students who took nutritional supplements received high levels of vitamin C, vitamin D, vitamin B_{12}, magnesium and zinc supplements, respectively. Although there was a decrease in physical activities and an increase in insomnia problems during the pandemic period, there was no increase in

the rates of smoking and alcohol use. Suggestions that can be drawn from the study are as follows. Students are advised not to go beyond their previous life practices in terms of nutrition, sleep, physical activity and additional foods while adapting to new situations.

REFERENCES

1. Committee, R, Regulations, I.H, Day, I, Air, C. and Skies, B. (2021).WHO Director-General ' s opening remarks at the media briefing on. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-COVID-19. (11.03.2020).
2. Gencalp, D.K. (2020). "COVID- 19 Salgını Döneminde İlk ve Acil Yardım Öğrencilerinin Beslenme Alışkanlıkları ve Fiziksel Aktivite Durumlarının Değerlendirilmesi". Eurasian Journal of Health Sciences, 1 (1), 1-15.
3. Macit, M.S. (2020). "COVID-19 Salgını Sonrası Yetişkin Bireylerin Beslenme Alışkanlıklarındaki Değişikliklerin Değerlendirilmesi". Mersin Üniversitesi Sağlık Bilimleri Dergisi, 13 (3), 277-288.
4. Rothe, C, Schunk, M, Sothmann, P, Bretzel, G, Froeschl, G, Wallrauch, C, Zimmer, T, Thiel, V, Janke, C, Guggemos, W, Seilmaier, M, Drosten, C, Vollmar, P, Zwirglmaier, K, Zange, S, Wölfel, R. and Hoelscher, M. (2020). "Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany". New England Journal of Medicine, 382 (10), 970–971.
5. Pfefferbaum, B. and North, C.S. (2020). "Mental Health and the COVID-19 Pandemic". New England Journal of Medicine, 6 (1), 510–512.
6. Eskici, G. (2020). "COVID-19 Pandemisi: Karantina İçin Beslenme Önerileri". Anatolian Clinic the Journal of Medical Sciences, 25 (Special Issue on COVID 19), 124-129.
7. Naja, F. and Hamadeh, R. (2020). "Nutrition amid the COVID-19 pandemic: a multi-level framework for action". European Journal of Clinical Nutrition, 74 (8), 1117–1121.
8. Caccialanza, R, Laviano, A, Lobascio, F, Montagna, E, Bruno, R, Ludovisi, S, Corsico, G.A, di Sabatino A, Belliato, M, Calvi, M, Iacona, I, Grugnetti, G, Bonadeo, E, Muzzi, A. and Cereda, E. (2020). "Early nutritional supplementation in non-critically ill patients hospitalized for the 2019 novel coronavirus disease (COVID-19): Rationale and feasibility of a shared pragmatic protocol". Nutrition, 74, 110835.
9. Chen, P, Mao, L, Nassis, G.P, Harmer, P, Ainsworth, B.E. and Li, F. (2020). "Coronavirus disease (COVID-19): The need to maintain regular physical activity while taking precautions". JSHS, 9 (2), 103–104.
10. Guldur, B.B, Goktepe, M.M. and Ozkan, A. (2020). "Determination of Physical Activity Levels and Healthy Lifestyle Behaviors of Health Services Vocational School Students". 6 (June), 112–126.
11. Buyukozturk, S, Kılıc Cakmak, E, Erkan Akgun, O, Karadeniz, S. and Demirel, F. (2018). "Bilimsel araştırma yöntemleri". Pegem Akademi.
12. Koksal, B.A. (2003). İstatistik Analiz Metotları (6.Baskı). Çağlayan Kitabevi, İstanbul, pp.234.
13. Settersten, R.A, Bernardi, L. and Härkönen, J. (2020). "Understanding the effects of COVID-19 through a life course lens". Advances Life Course Research, 45, 1-10.
14. Can, R. and Kurtulus, S. (2021). "Reflection of vaccine and COVID-19 fear in young groups in COVID-19 pandemic". Revista da Associacao Medica Brasileira, 67 (9), 1333-1337.
15. John, A, Ali, K, Marsh, H. and Reddy, P.H. (2021). "Can healthy lifestyle reduce disease progression of Alzheimer's during a global pandemic of COVID-19". Ageing Research Reviews, 70 (March). https://doi:10.1016/j.arr.2021.101406
16. Akdeniz Kudubes, A, Ayar, D, Bektas, I. and Bektas, M. (2022). "Predicting the effect of healthy lifestyle belief on attitude toward nutrition, exercise, physical activity, and weight-related self-efficacy in Turkish adolescents". Archives de Pediatrie, 29 (1), 44-50.
17. Santana J da, M, Milagres, M.P, Silva dos Santos, C, Brazil, J.M, Lima, E.R. and Pereira, M. (2021). "Dietary intake of university students during COVID-19 social distancing in the Northeast of Brazil and associated factors". Appetite. 162 (August 2020), 105172.
18. Palmer, K, Bschaden, A. and Stroebele-Benschop, N. (2021). "Changes in lifestyle, diet, and body weight during the first COVID 19 'lockdown' in a student sample. Appetite, (January), 167.
19. Celorio-Sardà, R, Comas-Basté, O, Latorre-Moratalla, M.L, Zerón-Rugerio, M.F, Urpi-Sarda, M, Illán-Villanueva, M, Farran-Codina, A, et al. (2021). "Effect of COVID-19 lockdown on dietary habits and lifestyle of food science students and professionals from spain. Nutrients, 13 (5), 1-13.
20. Boukrim, M, Obtel, M, Kasouati, J, Achbani, A. and Razine, R. (2021). "COVID-19 and confinement: Effect on weight load, physical activity and eating behavior of higher education students in southern Morocco". Annals of Global Health, 87 (1), 1-11. https://doi:10.5334/aogh.3144
21. Razi, M. and Nasiri, A. (2022). "Concerns of parents about children's overweight and obesity during the COVID-19 pandemic: A qualitative study". JPN, 63, 111-116.
22. Baquerizo-Sedano, L, Chaquila, J.A, Aguilar, L, Ordovás, J.M, González-Muniesa, P. and Garaulet, M. (2022). "Anti-COVID-19 measures threaten our healthy body weight: Changes in sleep and external synchronizers of circadian clocks during confinement". Clinical Nutrition, S0261-5614 (22), 00087-5. https://doi: 10.1016/j.clnu.2022.03.013.
23. Jahrami, H.A, Alhaj, O.A, Humood, A.M, Alenezi, A.F, Fekih-romdhane, F, Alrasheed, M.M, Saif, Z.Q, Bragazzi, N.L, Pandi-perumal, S.R, Bahammam, A.S. and Vitiello, M.V. (2022). "Sleep disturbances during the COVID-19 pandemic: a systematic review, meta-analysis, and meta-regression". Sleep Medicine Reviews, 1, 62.
24. Carino, M, Quill, Z, Gabbs, M, Sellers, E, Hamilton, J, Pinto, T, Jetha, M, Ho, J, Alecio, O.G, Dart, A. and Wicklow, B. (2022). "The impact of the COVID-19 pandemic on adolescents and young adults living with type 2 diabetes". Canadian Journal of Diabetes, 1, 1-10.
25. Rodríguez-Larrad, A, Mañas, A, Labayen, I, González Gross, M, Espin, A, Aznar, S, Serrano-Sánchez, J.A, *et al.* (2021). "Impact of COVID-19 confinement on physical activity and sedentary behaviour inspanish university students: Ole of gender". International Journal of Environmental Research and Public Health, 18 (369), 1-14.
26. Grant, W.B, Lahore, H, McDonnell, S.L, Baggerly, C.A, French, C.B, Aliano, J.L. and Bhattoa, H.P. (2020). "Evidence that vitamin d supplementation could reduce risk of influenza and COVID-19 infections and deaths". Nutrients, 12 (4), 988.
27. Anitua, E, Tierno, R. and Alkhraisat, M.H. (2022). "Current opinion on the role of vitamin D supplementation in respiratory infections and asthma/COPD exacerbations: A need to establish publication guidelines for overcoming the unpublished data". Clinical Nutrition,
28. Rogan, S, Luijckx, E, Taeymans, J, Haas, K. and Baur, H. (2020). "Physical Activity, Nutritional Habits, and Sleep Behavior Among Health Profession Students and Employees of a Swiss University During and After COVID-19 Confinement: Protocol for a Longitudinal Observational Study". JMIR Research Protocols, 9 (12), [e25051].
29. Kołota, A. and Głąbska, D. (2021). "Analysis of food habits during pandemic in a polish population-based sample of primary school adolescents: Diet and activity of youth during COVID-19 (day-19) study". Nutrients, 13 (11), 3711.
30. Sidebottom, C, Ullevig, S, Cheever, K. and Zhang, T. (2021). "Effects of COVID-19 pandemic and quarantine period on physical activity and dietary habits of college-aged students". Sports Medicine and Health Science Journal, 3 (4), 228-235.