

## THE EFFECT OF THE PANDEMIC ON EATING ATTITUDES, NUTRITIONAL HABITS, AND SELF-ESTEEM OF UNIVERSITY STUDENTS

PANDEMİNİN ÜNİVERSİTE ÖĞRENCİLERİNİN YEME TUTUMLARI, BESLENME ALIŞKANLIKLARI VE BENLİK SAYGILARINA ETKİSİ

Ebru BAŞKAYA <sup>1</sup>, Safiye ÖZGÜÇ <sup>2</sup>

<sup>1</sup>Uşak University, Vocational School of Health Services, Department of Health Care Services, Uşak, Turkey.

<sup>2</sup>Faculty of Health Sciences, Department of Psychiatric Nursing, Gaziantep University, Gaziantep, Turkey.

### ABSTRACT

**Objective:** The study aims to examine the effect of the pandemic on eating attitudes, nutritional habits, and self-esteem of university students.

**Methods:** The study was carried out in descriptive design. The universe of the study consists of all students studying at Uşak University Health Services Vocational School. The sample consisted of 550 students who met the criteria for participation in the study. "Participant Information Form", "Nutritional Habits Index", "Eating Attitude Test" and "Rosenberg Self-Esteem Scale" were used to collect the data.

**Results:** According to the research findings, 75.5% of the participants are women. 41.1% of the students defined their nutrition at medium level. It was observed that 88.7% of them consumed fast food-style foods. The students' eating attitude score average is  $17.07 \pm 10.59$ . The mean score of eating habits is  $10.16 \pm 3.42$ . The mean self-esteem score is  $15.66 \pm 5.42$ . It was determined that there is a weak and positive relationship between university students' self-esteem and eating attitude ( $r = .085$ ,  $p < 0.05$ ).

**Conclusion:** The pandemic process negatively affected students' eating attitudes, nutritional habits, and self-esteem.

**Keywords:** Covid-19, eating attitude, nutrition, self-esteem, university students.

### ÖZET

**Amaç:** Çalışmanın amacı pandeminin üniversite öğrencilerinin yeme tutumları, beslenme alışkanlıkları ve benlik saygılarına etkisini incelemektir.

**Gereç ve Yöntem:** Çalışma tanımlayıcı desende yürütülmüştür. Araştırmanın evrenini Uşak Üniversitesi Sağlık Hizmetleri Meslek Yüksekokulunda okuyan öğrenciler oluşturmaktadır. Örneklemi ise çalışmaya katılma kriterlerini sağlayan 550 öğrenci oluşturmuştur. Verilerin toplanmasında "Katılımcı Bilgi Formu", "Beslenme Alışkanlıkları İndeksi" "Yeme Tutumu Testi" ve "Rosenberg Benlik Saygısı Ölçeği" kullanılmıştır.

**Bulgular:** Araştırma bulgularına göre katılımcıların %75,5'i kadındır. Öğrencilerin %41,1'i beslenmesini orta düzeyde tanımlamıştır. %88,7'sinin fast food tarzı yiyecekleri tükettiği görülmüştür. Öğrencilerin yeme tutumu puan ortalaması  $17,07 \pm 10,59$  dur. Beslenme alışkanlıkları puan ortalaması  $10,16 \pm 3,42$  dir. Benlik saygısı puan ortalaması  $15,66 \pm 5,42$  dir. Üniversite öğrencilerinin benlik saygısı ile yeme tutumu arasında ( $r = .085$ ,  $p < 0.05$ ) pozitif yönde zayıf düzeyde anlamlı ilişki olduğu bulunmuştur.

**Sonuç:** Pandemi süreci öğrencilerin beslenme alışkanlıklarını, yeme tutumlarını ve benlik saygılarını olumsuz şekilde etkilemiştir.

**Anahtar kelimeler:** Covid-19, yeme tutumu, beslenme, benlik saygısı, üniversite öğrencileri.

**Sorumlu Yazar / Corresponding Author:** Ebru BAŞKAYA, RN, PhD. Uşak University, Department of Health Care Services, Vocational School of Health Services, Uşak, Türkiye. **E-mail:** ebru.kurdal@usak.edu.tr

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## INTRODUCTION

The World Health Organization (WHO) reported cases of pneumonia having an unknown cause in Wuhan, in China's Hubei Province on December 31, 2019. On January 5, 2020, a new coronavirus was identified that had not been previously detected in humans. After emerging in China, the new coronavirus affected the entire world in a very short time approximately three months. As of March 12, 2020, it was declared a pandemic by the World Health Organization (Budak-Korkmaz, 2020; WHO, 2020). WHO is reported to have the Covid-19 pandemic, which threatens both the physical and psychological health of individuals, has a mortality risk ranging from 0.5 percent to 3 percent (WHO, 2020). The Covid-19 pandemic continues to affect the lives of individuals in different ways. For example, social isolation during the pandemic has dramatically changed the lifestyles and habits of individuals (Bozkurt et al., 2020). University students are among the most affected by this change. University students' continuing education online, subsequent restrictions, and mandatory quarantines have caused many habits, especially nutritional habits, to change.

Another factor that affects nutritional habits is self-esteem. Self-esteem is a term that reflects the evaluation of one's worth (Erşan et al., 2009). If people have positive attitudes in their self-evaluations, their self-esteem is high, and if they have negative attitudes, their self-esteem is expressed as low (Diener, 2009). Low self-esteem can cause emotional and behavioral disorders such as anxiety, lack of motivation, suicidal behaviors, eating disorders, and depression (Öz et al., 2009). In a pandemic, people stay at home out of necessity, and the stress and negative emotions they experience may cause them to behave differently than they normally would (Romeo-Arroyo et al., 2020). Continuously monitoring and listening to pandemic news, spending increased amounts of time at home, and experiencing an increased desire to consume food depending on mood can lead to changes in eating behaviors (Kartal-Kaykısız, 2020).

Individuals may need to eat even when they are not hungry to keep their negative emotions under control and to feel happy and safe. The food consumed relieves the person's negative feelings for a short time. Because the relaxing effect created by food passes after a while and individuals have difficulty in coping with negative emotions again, they need to eat again (Serin-Şanlıer, 2018). This situation may increase in times of high uncertainty and significant threat perception such as a pandemic. Considering the ramifications of the pandemic process, it can be thought that abnormal eating attitudes and behaviors that threaten the health of the individual are risk factors for eating disorders.

University students need to have a positive attitude about eating during the pandemic process to prevent Covid-19 and facilitate the treatment of the disease if they become ill. Specific nutritional deficiencies that weaken the immune system, especially during the pandemic process, may cause increased susceptibility to infectious diseases (Khayyat-zadeh, 2020). Therefore, it is necessary to avoid deficiencies in nutrients that play an important role in immune cell triggering, interaction, differentiation, or functional expression to protect the immune system (Naja-Hamad, 2020). In this context, the nutritional behavior and attitudes of individuals are of vital importance. By these data, our study was conducted to determine the study aims to examine the effect of the pandemic on the eating attitudes, nutritional habits, and self-esteem of university students, and the answer to the following questions were searched:

1. How did the Covid-19 pandemic affect university students' eating attitudes?
2. How did the Covid-19 pandemic affect university students' nutritional habits?
3. How did the Covid-19 pandemic affect university students' self-esteem?

## MATERIALS AND METHODS

### Research design

This research is a descriptive study that aims to examine the effect of the pandemic on the eating attitudes, nutritional habits, and self-esteem of university students.

### Population and sample

The universe of the study consisted of all students studying at the Health Services Vocational School of Uşak University. The data of the study were collected between February and April 2021. G\*Power program was used to calculate of sample size. Previous studies were examined (Akyol-Çelik, 2020; Akyol-İmamoğlu, 2019) and the expected confidence intervals for the "Nutrition habit index" were determined, while the confidence interval was  $\alpha=0.05$ , the power of the test  $(1-\beta)$  0.95, and the effect

size  $d_z = 0.1813814$  and the total calculated as 397 people. The sample consisted of 550 students who met the criteria for participation in the study. The sample power was calculated as 99% in the posthoc power analysis.

### Data Collection Method

Data were collected online with the help of an e-questionnaire designed by the researchers. The software Google Forms was used in the design of the e-survey, and a link to the prepared questionnaire form was shared with the students. On average, each participant spent 15–20 min filling out the form.

### Data Collection Tools

A participant information form, the Eating Attitude Test (EAT), Nutritional Habits Index (NHI), and Rosenberg Self-Esteem Scale (RSES) were used to collect the data.

**Participant Information Form:** This form asks about the participant's age, gender, nutritional status, information about adequate and balanced nutrition, consumption of fast food (hamburger, toast, biscuits, etc.), the reason for consuming such food, number of meals per day before the pandemic, and number of meals per day during the pandemic. There are nine questions about the reason for skipping meals.

**Nutritional Habits Index:** The nutritional habits index (NHI) developed by Demirezen (1999) was rearranged as six items by Demirezen and Coşansu (2005) (Demirezen-Coşansu,2005). Consisting of six items, NHI was developed to determine the risks in nutritional behavior in children and adolescents. Students are asked to indicate the frequency of applying the items related to nutritional behavior. The frequency indicated were evaluated as never = 0 points, rarely = 1, sometimes = 2, often = 3 and always = 4. However, in the last item, scoring was done in reverse (always 0 points - never 4 points). In this research, Cronbach's alpha was calculated as 0.50.

**Eating Attitude Test:** It was developed by Garner and Garfinkel (1979) (Garner-Garfinkel, 1979). The validity and reliability study of the eating attitude test (EAT) in Turkey was carried out by Savaşır and Erol (1989) (Savaşır-Erol, 1989). The scale is Likert type and consists of six steps with expressions between "always" and "never". 30 points and above contains a risk for eating disorders. In this research, Cronbach's alpha was calculated as 0.78.

**Rosenberg Self-Esteem Scale:** It was developed by Rosenberg (1965). The scale is a 63-item self-report test that consists of 12 sub-categories made of multiple-choice questions. Turkish validity and reliability studies were conducted by Çuhadaroğlu in 1986 (Çuhadaroğlu, 1986). The self-esteem subscale, which measures self-esteem, was used in our study. Expressions are answered as "very true", "right", "wrong" and "very wrong" in a 4-point Likert type. According to the evaluation system of the scale, scoring from 3 to 0 is made in the questions questioning positive self-evaluation; In expressions for which negative self-evaluation is questioned, scores from 0 to 3 are made. The total score varies between 0-30. In this research, Cronbach's alpha was calculated as 0.57.

### Statistical Analysis

The research data were analyzed using the SPSS 23.0 statistics program (Statistical package for Social Sciences for Windows). Data were evaluated with frequency, mean, standard deviation, minimum and maximum values, independent sample t-test, one-way analysis of variance (Anova), Mann-Whitney U test, Kruskal Wallis test and Spearman's correlation analysis. Significance level was accepted as  $p < 0.05$ . Skewness (skewness) and Kurtosis (kurtosis) values (+1,500 and -1,500) were taken into account in the assumption of normality.

### Ethical Approval

The approval to conduct the present study was obtained from the Uşak University Ethics Committee (Decision date and number: December 23, 2020-15). The study was carried out by the 1964 Helsinki Declaration and the ethical standards of the National Research Committee. On the Google Form questionnaire, the students were informed about the purpose of the study, and their consent was obtained online.

## RESULTS

The findings of this study, which was conducted to examine the effect of the pandemic on the eating attitudes, nutritional habits, and self-esteem of university students, are given below.

The distribution of the sociodemographic characteristics of the students is given in Table 1. In total, 75.5% of the participants are female, 76.5% are 20 years old and younger, 41.1% have a medium definition of their nutrition, 65.1% know about adequate and balanced nutrition, and 88% consume fast-food-style food (of whom 90.6% consume such food because they want to). A total of 61.8% had three meals per day before the pandemic, and 43.6% had two or fewer meals per day during the pandemic of whom 44% skipped meals because they did not have an appetite.

**Table 1.** Distribution of the research socio-demographic characteristics (n=550)

	Frequency	%
<b>Gender</b>		
Female	415	75.5
Male	135	24.5
<b>Age (Min=17 Max= 32 Mean± SD=19.88±1.58)</b>		
≤ 20	421	76.5
≥ 21	129	23.5
<b>Status of defining of their nutrition</b>		
Very good	62	11.3
Good	223	40.5
Medium	230	41.8
Bad	55	6.4
<b>Getting information about adequate and balanced nutrition</b>		
Yes	358	65.1
No	192	34.9
<b>Consumption of fast food style foods</b>		
Yes	488	88.7
No	62	11.3
<b>Reason for consuming fast food style foods</b>		
Because I want it	496	90.2
Because there is no ready-to-eat meal at home	21	3.8
Because I don't like home food	3	0.5
To be with friends	30	5.5
<b>Number of meals before the epidemic</b>		
Two or fewer meals	169	30.7
Three meals	340	61.8
Four or more meals	41	7.5
<b>Number of meals in the epidemic period</b>		
Two or fewer meals	240	43.6
Three meals	215	39.1
Four or more meals	95	17.3
<b>Reason for skipping meals</b>		
I can't wake up in the morning	120	21.8
I do not have time	50	9.1
I have no appetite	242	44.0
Other	138	25.1

The distributions of the EAT, NHI, and RSES total scale scores of the students are given in Table 2. The mean EAT score of the participants is  $17.07 \pm 10.59$ ; NHI means the score is  $10.16 \pm 3.42$ ; RSES means the score is determined as  $15.66 \pm 5.42$  (Table 2).

**Table 2.** University students' EAT, NHI, and RSES total scale scores, standard deviations, minimum and maximum values

Scales	Number of items	Mean $\pm$ SD	Values that can be taken from scales		Values of participants	
			Minimum	Maximum	Minimum	Maximum
EAT	40	17.07 $\pm$ 10.59	0	120	1	76
NHI	6	10.16 $\pm$ 3.42	0	24	2	24
RSES	10	15.66 $\pm$ 5.42	0	30	5	29

Abbreviations: EAT, Eating Attitude Test; NHI, Nutritional Habits Index; RSES, Rosenberg Self-Esteem Scale; SD, Standart Deviation.

The findings regarding the differences between the demographic characteristics of the students and the mean scores of the EAT, NHI, and RSES are presented in Table 3. When the related table is examined; it was found that there were statistically significant differences between students' fast food consumption, nutrition definition status, the number of meals before the epidemic, and the mean scores of the EAT ( $p < 0.05$ ). There are statistically significant differences between the NHI and students' gender, knowledge about adequate and balanced nutrition, consumption of fast food, the definition of nutrition, the number of meals before the epidemic, the number of meals during the coronavirus period, the reason for skipping meals ( $p < 0.05$ ). It was determined that there was no statistically significant difference between the demographic characteristics of the students and the mean scores of the RSES ( $p > 0.05$ ).

The findings regarding the number of meals of the students before the epidemic and the distribution of the number of meals during the coronavirus epidemic are presented in Table 4. According to these results, the dependence between the number of meals before the epidemic and the number of meals during the coronavirus epidemic was statistically significant ( $X^2=68.637$ ;  $p < 0.05$ ).

**Table 3.** Comparison of the Students' Sociodemographic Characteristics and the Mean Scores of the EAT, NHI and RSES (n:550)

		<b>EAT</b>	<b>NHI</b>	<b>RSES</b>
		<b>Mean± SD</b>	<b>Mean± SD</b>	<b>Mean± SD</b>
<b>Gender</b>	Female	17.50±11.16	9.97±3.24	15.71±5.40
	Male	15.76±8.45	10.76±3.85	15.76±5.40
	Z	-1.203		
	t		-2.333	-.086
	p	.229	.020	.932
<b>Getting information about adequate and balanced nutrition</b>	Yes	17.72±11.47	9.86±3.38	15.81±5.39
	No	15.85±8.57	10.73±3.41	15.55±5.42
	Z	-1.040		
	t		-2.896	.537
	p	.299	<b>.004</b>	.591
<b>Consumption of fast food style foods</b>	Yes	16.72±10.63	10.49±3.34	15.63±5.30
	No	19.82±9.85	7.61±2.93	16.44±6.09
	Z	-3.151		
	t		6.461	-.993
	p	<b>.002</b>	<b>&lt;0.001</b>	.324
<b>Status of defining of their nutrition</b>	Very good	21.41±15.11	9.36±4.09	15.97±5.54
	Good	16.50±10.41	9.48±2.94	15.47±5.62
	Medium	15.72±8.79	10.56±3.18	15.54±5.13
	Bad	21.89±9.93	13.31±4.25	18.08±4.92
	H	19.751		
<b>Reason for consuming fast food style foods</b>	F		16.343	2.480
	p	<b>&lt;0.001</b>	<b>&lt;0.001</b>	.060
	I want it	17.24±10.87	10.15±3.44	15.81±5.46
	No ready-to-eat meal at home	18.14±8.47	10.95±3.78	15.43±4.26
	Doesn't like home food	10.33±4.04	11.67±2.08	17.67±8.50
<b>Number of meals before the epidemic</b>	To be with friends	14.30±6.22	9.63±2.74	14.21±4.48
	H	4.611		
	F		.808	.958
	p	.203	.490	.412
	Two or fewer meals	18.54±10.20	10.23±3.11	15.59±5.30
<b>Number of meals in the epidemic period</b>	Three meals	16.14±9.97	9.90±3.39	15.64±5.51
	Four or more meals	18.75±15.40	12.02±4.22	17.00±4.71
	H	12.939		
	F		7.258	1.215
	p	.002	.001	.298
<b>Reason for skipping meals</b>	Two or fewer meals	16.77±9.88	10.47±3.38	15.86±5.11
	Three meals	16.55±9.41	9.31±3.38	15.51±5.78
	Four or more meals	19.02±14.12	11.30±3.13	15.85±5.23
	H	.049		
	F		13.538	.262
<b>Reason for skipping meals</b>	p	.976	<0.001	.770
	Can't wake up in the morning	17.49±10.01	11.03±3.54	15.69±5.47
	Doesn't have time	19.16±10.51	11.80±4.15	16.50±5.48
	Has no appetite	16.55±10.12	9.72±3.09	15.44±5.17
	Other	16.88±11.83	9.57±3.25	15.95±5.70
	H	3.683		
	F		9.523	.633
	p	.298	<b>&lt;0.001</b>	.594

Abbreviations: Z: Mann-Whitney U; t: Independent samples t-test; H: Kruskal Wallis test; F: One Way ANOVA; SD: Standart Deviation

**Table 4.** Distribution of the Number of Meals before the Epidemic and the Number of Meals during the Coronavirus Epidemic Process

		Number of meals in the epidemic period			Total	X <sup>2</sup>	sd	p
		Two or fewer meals	Three meals	Four or more meals				
<b>Number of meals before the epidemic</b>	Two or fewer meals	97	57	15	169	68.63 7	4	<0.00 1
	Three meals	133	151	56	340			
	Four or more meals	10	7	24	41			
	Total	240	215	95	550			

Abbreviations: X<sup>2</sup>: Chi-Square

The results of Spearman's correlation analysis between the EAT, NHI, and RSES scales of the students are given in Table 5. According to the results of analysis, a weak positive relationship exists between the university students' RSES and EAT ( $r = .085$ ,  $p = 0.047$ ), but no other relationship is found between the scales.

**Table 5.** Relationship between EAT, NHI, and RSES

		1	2	3
1	<b>NHI total</b>	1		
2	<b>EAT total</b>	-.035	1	
	<b>p</b>	.408		
3	<b>RSES total</b>	.044	.085*	1
	<b>p</b>	.307	.047*	

## DISCUSSION

The findings of the study examining the effects of the pandemic on the eating attitudes, nutritional habits, and self-esteem of university important data regarding the nutritional patterns of these students during the pandemic process. The results of the research were discussed in the relevant literature.

As a result of the study, the average EAT score of the students was found to be  $17.07 \pm 10.59$ . At the same time, it was observed that there were statistically significant differences between the EAT of students and their status of defining their nutrition, fast food consumption, and the number of meals before the epidemic. The study conducted by Tanrıverdi et al. stated that there is a significant difference between the status of students' definition of their nutrition and their eating attitudes (Tanrıverdi et al., 2011). The study conducted by De Vogli et al. stated that fast-food consumption was effective on individuals' eating attitudes (De Vogli et al., 2014).

As a result of the study, the average NHI score of the students was found to be  $10.16 \pm 3.42$ . According to this scoring system, the nutritional habits of students during the pandemic can be evaluated as being at a medium risk level. The results of the study conducted with paramedic students during the Covid-19 outbreak revealed that the nutritional scores of the students before the epidemic were found to be significantly lower than the nutritional scores during the epidemic process (Akyol-Çelik, 2020).

There were statistically significant differences between NHI and students' gender, their nutritional status, fast food consumption, knowledge of adequate and balanced nutrition, the number of meals before the epidemic, the number of meals during the coronavirus period, and the reason for skipping meals. In our study, the average point of nutritional habits of male students was found higher than female students. Von Bothmer and Fridlund, in a study with Swedish university students, found that female students had healthier nutritional habits than male students (Von Bothmer-Fridlund, 2005). In the study conducted by Altın, no statistical difference was found between the groups regarding the nutritional habits of male and female students (Altın, 2005). In our study, the average score of nutritional habits was found to be higher in those who consume fast food. In the study by Sidor and Rzymiski, it was stated that individuals ate more junk food during the quarantine period (Sidor-Rzymiski, 2020). The reason for this may be that people prefer foods that are easier to prepare and consume during the pandemic process (Mull, 2020). López and Bermejo, it was stated that energy and nutrients obtained through adequate and balanced nutrition play an important role in supporting the immune system

(López-Bermejo, 2017). Therefore, it is important to increase the knowledge level of students about adequate and balanced nutrition within the scope of nutritional habits. In the study conducted by Akyol and Çelik, it was found that the nutritional scores of the students before the epidemic were significantly lower than the nutritional scores during the epidemic (Akyol-Çelik, 2020). In the results of the study examining nutritional habits, it was stated that the participants skipped more meals (2 percent) and ate more (39 percent) during the pandemic as compared to before the pandemic (Khubchandani et al., 2020). Another study found that there was an increase in meal skipping as compared to before the pandemic (Husain-Ashkanani, 2020). An examination of the nutritional habits of university students during the pandemic process reveals that many problems that may arise in the future can be prevented by adopting positive nutritional habits. It is also the common consensus of scientists that the disease caused by the coronavirus is easier to overcome by those who have strong immunity (<https://www.espen.org>). In this context, it is important to have a positive nutritional attitude in both the prevention and treatment of the disease.

Adolescence is both a risky period and an important turning point in the development of self-esteem (Whelan et al., 2007). In the study, the mean RSES score of the students was found to be  $15.66 \pm 5.42$ . It can be said that the students' self-esteem was at moderate levels during the pandemic. In addition, it was determined that there is a weak and positive relationship between self-esteem and attitudes about eating. In the study conducted by Lawler and Nixon, it was found that low self-esteem negatively affected eating attitudes (Lawler-Nixon, 2011). Looking at the other effects of the pandemic on eating, an online study was conducted in seven different languages with the participation of 35 research companies from five different continents in April of 2020. The results of a study titled, "Covid-19, Effects of Compulsion to Stay at Home on Eating Attitude and Physical Activity," stated that unhealthy eating attitudes such as eating more frequent snacks, increasing the number of main meals, and a tendency to eat out of control increased during the compulsory stay-at-home period (Ammar et al., 2020). As a result, the Covid-19 pandemic process has significantly affected the eating attitudes of young adults (Huber et al., 2020).

In the studies conducted in the literature, it has been stated that the unhealthy nutritional habits of individuals such as eating more frequent snacks, increasing the number of main meals, and eating out of control during the pandemic process increased during their quarantine days (Ammar et al., 2020; Mumena, 2020; Powell et al., 2021). In another study, it was found that the food consumption of individuals who stay at home increased due to quarantine measures increased compared to their previous consumption (Özlem-Mehmet, 2020; Yılmaz et al., 2020). In an additional study, fast-food consumption among teens stood at 44.6 percent, while it increased to 64 percent during quarantine (Ruiz-Roso et al., 2020). These results indicate that the pandemic process poses a risk in terms of unhealthy eating behaviors, such as the consumption of fast food-style food. A study examining the eating attitude of midwifery students during the Covid-19 pandemic by Aydın Kartal and Kaygisiz revealed that the changed eating behaviors of students during the pandemic (Kartal-Kaykısız, 2020). A qualitative study was conducted to examine the changes in the food choices of university students in the USA during the pandemic (the results indicated significant, generally negative changes in the food choices of the students during the pandemic (Ammar et al., 2020). Since sufficient nutrition benefits the immune system, immune system functions are impaired when nutrition is insufficient and unbalanced, and sensitivity to infections increases (Yasar-Üstün, 2021). Particularly during this pandemic, healthy eating behaviors are crucial.

In line with this result, consuming food that strengthens the immune system plays a key role in dealing with the negative effects of quarantine. The primary limitation of this study is conducting the study with only a state university and doing it online. In addition, the Cronbach alpha values of the study were lower than the original scales. Therefore, the findings of the study cannot be generalized to all university students. It can only be generalized to students studying at the school where the study was conducted.

## CONCLUSION

As a result, in this study, it was determined that the eating attitudes, eating habits and self-esteem of university students were negatively affected by the epidemic process during the Covid-19 outbreak. In this period when the world is struggling with a new disease, many studies will be conducted to address the relationship between eating habits, eating attitudes and respect for banishment. It is thought that



conducting future studies with more participants in different sample groups will be important in terms of evaluating eating attitudes, eating habits and self-esteem.

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### Conflict of Interest

The authors report no actual or potential conflicts of interest.

### Author Contributions

E.B: Plan, design, Material, methods and data collection, Data analysis and comments; S.Ö: Writing and corrections

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## REFERENCES

- Akyol, P., & Çelik, A. (2020). Investigation of nutrition habits of first and emergency aid students during the covid-19 outbreak period. *Electronic Turkish Studies*, 15(4),62-79. <https://dx.doi.org/10.7827>
- Akyol, P., & İmamoğlu, O. (2019). The nutritional habits of the university students according to gender. *Sportmetre*, 17(3), 67-77.
- Altın, M. (2015). The relation of eating habits with obesity in university students. *Sportif Bakış:Spor ve Eğitim Bilimleri Dergisi*, 2(2), 87-96.
- Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., ... & Mataruna, L. (2020). Effects of Covid-19 home confinement on eating behaviour and physical activity: Results of the ECLB-COVID19 international online survey. *Nutrients*, 12(6), 1583. <https://doi.org/10.3390/nu12061583>
- Budak, F., & Korkmaz, Ş. (2020). An overall evaluation for the Covid-19 pandemic process: the case of Turkey. *Journal of Social Research and Management*, 1(1), 62-79. <https://doi.org/10.35375/sayod.738657>
- Bozkurt, Y., Zeybek, Z., & Aşkın, R. (2020). Covid-19 pandemic: Psychological effects and Therapeutic interventions. *Istanbul Commerce University Institute of Social Sciences Journal*, 19 (37),304-318.
- Çuhadaroğlu, F. (1986) Self-Esteem in adolescents. Hacettepe University, Medical School, Unpublished PhD Thesis, Department of Psychiatry. Hacettepe University, Ankara.
- Demirezen, E., & Coşansu, G. (2005). Evaluation of nutritional habits on adolescent students. *Journal of Continuous Medical Education*, 14 (8), 174–178.
- De Vogli, R., Kouvonen, A., & Gimeno, D. (2014). The influence of market deregulation on fast food consumption and body mass index: a cross-national time series analysis. *Bulletin of the World Health Organization*, 92(2), 99-107. <http://dx.doi.org/10.2471/BLT.13.120287>
- Diener, E. (1984). Subjective Well-Being. *Psychological Bulletin*, 95(3), 542-575.
- Erşan, E. E., Doğan, O., & Doğan, S. (2009). The relationship between self-esteem levels and some sociodemographic characteristics of the students of college of physical education and sports. *Turkish Journal of Clinical Psychiatry*, 12(1), 35-42.
- Huber, B. C., Steffen, J., Schlichtiger, J., & Brunner, S. (2021). Altered nutrition behavior during Covid-19 pandemic lockdown in young adults. *European Journal of Nutrition*, 60(5), 2593-2602. <https://doi.org/10.1007/s00394-02002435-6>
- Husain, W., & Ashkanani, F. (2020). Does Covid-19 change dietary habits and lifestyle behaviours in Kuwait: a community-based cross-sectional study. *Environmental Health and Preventive Medicine*, 25(1),1-13. <https://doi.org/10.1186/s12199-020-00901-5>
- Khayyat-zadeh, S. S. (2020). Nutrition and infection with Covid-19. *Journal of Nutrition and Food Security*, 5(2), 93-96.
- Garner, D. M., & Garfinkel, P. E. (1979). The eating attitudes test: An index of the symptoms of anorexia nervosa. *Psychological Medicine*, 9(2), 273-279. <https://doi.org/10.1017/S0033291700030762> <https://www.espen.org> [Date of access: 28.03.2021]

- Kartal, Y. A., & Kaykisiz, E. Y. (2020). Investigation of the relationship between eating behaviors and premenstrual syndrome symptoms of midwifery students in the Covid-19 outbreak. *Medical Sciences*, 15(4), 133-143. <https://doi.org/10.12739/NWSA.2020.15.4.1B0097>
- Khubchandani, J., Kandiah, J., & Saiki, D. (2020). The Covid-19 pandemic, stress, and eating practices in the United States. *European Journal of Investigation in Health, Psychology and Education*, 10(4), 950-956. <https://doi.org/doi.org/10.3390/ejihpe10040067>
- Lawler, M., & Nixon, E. (2011). Body dissatisfaction among adolescent boys and girls: the effects of body mass, peer appearance culture and internalization of appearance ideals. *Journal of Youth and Adolescence*, 40(1), 59-71. <https://doi.org/10.1007/s10964-009-9500-2>
- López Plaza, B., & Bermejo López, L. M. (2017). Nutrition and immune system disorders. *Nutricion hospitalaria*, 34(Suppl 4), 68-71. <https://doi.org/10.20960/nh.1575>
- Mull, A. (2020). Americans have baked all the flour away: The pandemic is reintroducing the nation to its kitchens. *The Atlantic*, 12.
- Mumena, W. (2021). Impact of COVID-19 curfew on eating habits, eating frequency, and weight according to food security status in Saudi Arabia: A Retrospective Study. *Progress in Nutrition*, 22(3), e2020075. <https://doi.org/10.23751/pn.v22i4.10024>
- Naja, F., & Hamadeh, R. (2020). Nutrition amid the Covid-19 pandemic: a multi-level framework for action. *European Journal of Clinical Nutrition*, 74(8), 1117-1121. <https://doi.org/10.1038/s41430020-0634-3>
- Öz, R., Yılmaz, H. B., & Akçay, N. (2009). The self-respect levels in children with Diabetes Type 1. *Journal of Human Sciences*, 6(1), 330-338.
- Özlem, A., & Mehmet, N. (2020). Eating habits changes during Covid-19 pandemic lockdown. *ESTÜDAM Halk Sağlığı Dergisi*, 5, 169-177. <https://doi.org/10.35232/estudamhsd.796735>
- Powell, P. K., Lawler, S., Durham, J., & Cullerton, K. (2021). The food choices of US university students during Covid-19. *Appetite*, 161, 105130. <https://doi.org/10.1016/j.appet.2021.105130>
- Romeo-Arroyo, E., Mora, M., & Vázquez-Araújo, L. (2020). Consumer behavior in confinement times: Food choice and cooking attitudes in Spain. *International Journal of Gastronomy and Food Science*, 21, 100226. <https://doi.org/10.1016/j.ijgfs.2020.100226>
- Ruiz-Roso, M. B., de Carvalho Padilha, P., Mantilla Escalante, D. C., Ulloa, N., Brun, P., Acevedo Correa, D., ... & Dávalos, A. (2020). Covid-19 confinement and changes of adolescent's dietary trends in Italy, Spain, Chile, Colombia and Brazil. *Nutrients*, 12(6), 1807. <https://doi.org/10.3390/nu12061807>
- Serin, Y., & Sanlier, N. (2018). Emotional eating, the factors that affect food intake, and basic approaches to nursing care of patients with eating disorders. *Journal of Psychiatric Nursing*, 9, 135-146. <https://doi.org/10.14744/phd.2018.23600>
- Savaşır, I., & Erol, N. (1989). Eating attitude test: Anorexia nervosa symptoms index. *Journal of Psychology*, 7, 19-25.
- Sidor, A., & Rzymiski, P. (2020). Dietary choices and habits during Covid-19 lockdown: experience from Poland. *Nutrients*, 12(6), 1657. <https://doi.org/10.3390/nu12061657>
- Tanriverdi, D., Savas, E., Gonulluoglu, N., Kurdal, E., & Balik, G. (2011). Determination of high school students' eating attitudes, eating behavior, and self-esteem. *European Journal Of Therapeutics*, 17(1), 33-39.
- Von Bothmer, M. I., & Fridlund, B. (2005). Gender differences in health habits and motivation for a healthy lifestyle among Swedish university students. *Nursing & Health Sciences*, 7(2), 107-118. <https://doi.org/10.1111/j.1442-2018.2005.00227>
- Yasar, R. K., & Aytekin, Ö. Ü. (2021). Current Overview of Relationship between Covid-19 and Nutrition. *Academic Food*, 19(1), 108-115. [https://doi.org/10.24323/akademik\\_gida.927735](https://doi.org/10.24323/akademik_gida.927735)
- Yılmaz, H. Ö., Aslan, R., & Unal, C. (2020). Effect of the Covid-19 pandemic on eating habits and food purchasing behaviors of university students. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*, 15(3), 154-159. <http://dx.doi.org/10.21109/kesmas.v15i3.3897>
- Whelan, A., Haywood, P., & Galloway, S. (2007). Low self-esteem: Group cognitive behavior therapy. *British Journal of Learning Disabilities*, 35(2), 125-130. <https://doi.org/10.1111/j.1468-3156.2007.00418.x>
- World Health Organization. Novel coronavirus (2019-nCoV). Situation Report 2020. [Date of access: 12.03.2021]