The Relationship Between Students' COVID-19 Perception and Healthy Eating Attitudes: A University Example

Öğrencilerin COVİD-19 Algısı ile Sağlıklı Beslenme Tutumları Arasındaki İlişki: Bir Üniversite Örneği

Mehmetcan KEMALOĞLU[1]

ABSTRACT

During the COVID-19 pandemic, eating habits have changed and weight has increased significantly due to increasing fear and anxiety, especially among school-age children and young people. This study was conducted to evaluate whether there is a relationship between students' COVID-19 perceptions and attitudes and their healthy eating attitudes. The cross-sectional study was conducted with 388 students. Participants were administered a three-stage online questionnaire consisting of 'Demographic Characteristics Form', 'Attitude Scale on Healthy Nutrition' and 'Scale for the Evaluation of Perceptions and Attitudes Towards the Coronavirus Pandemic'. A statistically significant difference was found only in the personal sub-dimension of the scale for evaluating perceptions and attitudes towards the COVID-19 pandemic according to COVID-19 status. A weak positive correlation was found between the and cognitive avoidance (r:0.232, p<0.001) sub-dimension of the scale for evaluating perceptions and attitudes towards the COVID-19 pandemic and the Attitudes Towards Healthy Eating Scale. A very weak negative relationship was found between the belief (r:-0.113, p:0.025) and avoidance of personal contact (r:-0.157, p:0.002) sub-dimensions and the Attitudes Towards Healthy Eating Scale. In the study, it was determined that having COVID-19 disease and gender affected COVID-19 perceptions and attitudes. In addition, weak but significant relationships were found between healthy eating attitudes and COVID-19 perceptions and attitudes.

Keywords: COVID-19 perception, Healthy eating, University student

ÖZ

COVİD-19 pandemisi döneminde özellikle okul çağındaki çocuk ve gençlerde artan korku ve endişe nedeniyle beslenme alışkanlıkları değişmiş ve ağırlık önemli ölçüde arttırmıştır. Araştırma, öğrencilerin COVİD-19 algı ve tutumları ile sağlıklı beslenme tutumları arasında bir ilişki olup olmadığını değerlendirmek amacı ile yürütülmüştür. Kesitsel tipte tasarlanmış olan çalışma 388 öğrenci ile gerçekleştirilmiştir. Katılımcılara, 'Demografik Özellikler Formu', 'Sağlıklı Beslenmeye İlişkin Tutum Ölçeği' ve 'Koronavirüs Salgınına Yönelik Algı ve Tutumların Değerlendirilmesi Ölçeği'nden oluşan üç aşamalı çevrimiçi anket uygulanmıştır. COVİD-19 geçirme durumlarına göre sadece COVİD-19 salgınına yönelik algı ve tutumları değerlendirme ölçeği kişisel alt boyutunda istatistiksel olarak anlamlı fark tespit edilmiştir. COVİD-19 salgınına yönelik algı ve tutumları değerlendirme ölçeği bilişsel kaçınma (r:0.232, p<0.001) alt boyutu ile Sağlıklı Beslenmeye İlişkin Tutum Ölçeği arasında pozitif yönde zayıf bir ilişki tespit edilmiştir. İnanç (r:-0.113, p:0.025) ve kişisel temastan kaçınma (r:-0.157, p:0.002) alt boyutları ile Sağlıklı Beslenmeye İlişkin Tutum Ölçeği arasında ise negatif yönde çok zayıf bir ilişki tespit edilmiştir. Çalışmada COVİD-19 hastalığı geçirmenin ve cinsiyetin COVİD-19 algı ve tutumlarını etkilediği tespit edilmiştir. Ayrıca sağlıklı beslenme tutumları ile COVİD-19 algı ve tutumları arasında zayıf fakat anlamlı ilişkiler bulunmuştur.

Anahtar Kelimeler: COVİD-19 algısı, Sağlıklı beslenme, Üniversite öğrencisi

Ress. Asst., Mehmetcan KEMALOĞLU, Nutrition and Dietetics, Agri Ibrahim Cecen University, Nutrition and Dietetics Department, mkemaloglu@agri.edu.tr, ORCID: 0000-0002-0334-3987

İletişim / Corresponding Author: Mehmetcan KEMALOĞLU
e-posta /e-mail: mkemaloglu@agri.edu.tr

INTRODUCTION

The COVID-19 pandemic has not only posed significant challenges to public health systems worldwide but has also brought about profound implications for various aspects of human life, including dietary habits and perceptions of the disease.[1] As the pandemic continues to unfold, understanding the interplay between individuals' perceptions and attitudes towards COVID-19 and their dietary behaviors has emerged as a critical area of investigation. Recent studies have underscored the complex relationship between COVID-19 perceptions and attitudes and health-related behaviors, with particular emphasis on the role of nutrition in mitigating the impact of the pandemic. For instance, Wise et al. (2020) explored the association between COVID-19 risk perceptions and dietary behaviors among adults in the United States, highlighting the potential influence of perceived susceptibility to the virus on dietary choices.[2] Similarly, in a study among Brazilian adults, Freitas et al. (2021) found that individuals with higher levels of COVID-19-related anxiety were more likely to engage in unhealthy eating behaviors, suggesting a link between psychological distress and dietary patterns during the pandemic.[3] Furthermore, the study by Ortenburger et al. (2021) conducted a cross-sectional investigation into the relationship between COVID-19 anxiety and dietary patterns among university students, revealing significant associations between psychological distress and unhealthy eating habits.[4] Additionally, Sadler et al. (2021) revealed the impact of COVID-19-related stress on food choices and nutritional intake among adults, shedding light on the intricate links between psychosocial factors and dietary behaviors during the pandemic.[5] Despite these valuable insights, gaps remain in our understanding of how COVID-19 perceptions and attitudes intersect with healthy eating attitudes, particularly among university students, who represent a unique demographic cohort facing distinct challenges in navigating the pandemic landscape. Therefore, in this study, the possible relationship between university students' COVID-19 perceptions and attitudes and healthy eating attitudes was investigated. Evaluations were made according to gender and Covid-19 exposure status.

MATERIAL AND METHOD

Subjects

The study was designed as a cross-sectional study to evaluate the possible relationship between students' perceptions and attitudes about COVID-19 and their healthy eating attitudes. It was conducted at Agri Ibrahim Cecen University between October and December 2022. The universe of the study; Agri Ibrahim Cecen University; It consists of students studying at the university's campus. According to data received from Agri Ibrahim Cecen University, a total of 12,193 students receive education. In a study investigating perceived stress among students in Turkey during the COVID-19 pandemic, it was found that 71.23% of students had high perceived stress levels.[6] Considering this data, the sample size was calculated as 372 people with a 95% confidence level (α=0.05) and 99% power (β=0.01) using the OpenEpi Analysis program. Considering the possible problems that may occur during the study process, the number of samples was determined as 400. The participants of the study were selected by simple random sampling method from students aged eighteen and over. The students' departments were not taken into consideration within the scope of the research. Only nutrition and dietetics students who were assumed to have a high level of nutritional knowledge were excluded from the study. The study concluded that, a total of 420 people were achieved. When the data obtained was examined, it was determined that 25 people entered incomplete data and 7 people entered incorrect data. The data of a total of 32 people were excluded

Data Collection Tools

A three-stage online survey (it was created with Google forms and shared via WhatsApp and Telegram groups) consisting of the 'Demographic Characteristics Form', 'Attitude Scale on Healthy Nutrition' and Perceptions and Attitudes towards COVID-19 Pandemic Scale' was applied to the participants.

Demographic Characteristics Form: The form prepared by the researcher by review the literature (age, gender, grade, cigarette and alcohol using, regular exercise (at least 150 minutes/week of moderate-intensity aerobic physical activity), COVID-19 history) consists of 11 questions.

Attitude Scale on Healthy Nutrition (ASHN): ASHN consists of 21 items and 4 subscales in total. In the scale evaluated with a 5" likert type ("I strongly disagree", "I disagree", "I am undecided", "I agree", "I strongly agree"), the items related to positive attitude are; Items related to 1, 2, 3, 4 and 5 negative attitudes were scored as 5, 4, 3, 2 and 1. The total of points that can be obtained varies between 21-105. The increase in total scores indicates that the participants' attitudes towards healthy eating have increased. The participants' scores were interpreted as 0-21 very low, 22-42 low, 43-63 medium, 64-84 high and 85-105 having an attitude towards healthy eating at the ideal level. The Turkish validity and reliability of the study was performed by Demir et al.[7]

Perceptions and Attitudes towards COVID-19 Pandemic Scale: The scale consists of 53 item 4 sub-dimensions and is evaluated with 5" likert type ("I strongly disagree", "I disagree", "I am undecided", "I agree", "I strongly agree"). All sub-dimensions are evaluated independently and separate scores are obtained. It is also possible to evaluate sub-dimensions independently. High scores for all sub-dimensions indicate that the belief in that sub-dimension is high. The Turkish validity and reliability of the study was conducted by Artan et al.[8] The study received support under Tubitak 2209-A project with the application number 1919B012111236.

Ethical Considerations

Ethics commission approval was received from the Scientific Research Ethics Committee of Agri Ibrahim Cecen University with the decision dated 08.11.2022 and numbered 223. In addition, institutional permission was obtained for the study to be conducted at Agri Ibrahim Cecen University. After obtaining the necessary permissions, the students filled out the form consisting of an online survey and scale on a voluntary basis. The informed consent form was added to the first page of the form consisting of the online survey and scale, and participation approval was received online. The study was performed following the Declaration of Helsinki.

Statistical Analysis

Data analysis was done with SPSS 25.0 program and 95% confidence interval was used. Descriptive statistics for individuals' demographic characteristics are shown as frequencies and percentages. Descriptive statistics for numerical variables are given as mean ± standard deviation for normally distributed data, and median (min-max) values for non-normally distributed data. After calculating the scale scores, the suitability of the scores to normal distribution was examined with kurtosis and skewness coefficients. It was determined that the kurtosis and skewness coefficients of each score were between -1.5 and +1.5, and the scores were found to have a normal distribution.[9] Since the data showed normal distribution, parametric testing techniques were used. "Student's T Test" (gender and COVID-19 history) and "Anova" (ASHN score distributions) were used for normally distributed data when comparing independent groups. The relationships between the scales were examined with the "Pearson Correlation Coefficient".[9] The difference was considered statistically significant for $p < 0.05$.

RESULTS AND DISCUSSION

Table 1 shows the sociodemographic characteristics distribution of the participants. 79.1% of the participants are female. It was determined that the average age of the participants was 20.97±1.59 1st grade students participated in the study with 31.2%. While 82% of the participants do not smoke, 94.1% do not drink alcohol and 69.3% do not exercise regularly. 61.6% of the participants had not had COVID-19 and 89.2% had received COVID-19 vaccine.

A significant difference was found between genders in the macro and avoidance of personal contact sub-dimensions of the

Table 1. Distribution of Sociodemographic Characteristics of Participants (n:388)

Characteristics	n	%
Gender		
Female	307	79.1
Male	81	20.9
Age (years) (x̄ ±SD)	20.97 ± 1.59	
(min-max)	(18-30)	
Grade		
1. Grade	121	31.2
2. Grade	119	30.6
3. Grade	69	17.8
4. Grade	79	20.4
Cigarette		
Uses	56	14.4
Not using	318	82
I was using but I stopped	14	3.6
Alcohol		
Uses	20	5.1
Not using	365	94.1
I was using but I stopped	3	0.8
Regular Exercise		
Doing	119	30.7
Doesn't do	269	69.3
Did you diagnosed COVID-19 ?		
Yes	149	38.4
No	239	61.6
Did you have COVID-19 vaccine?		
Yes	346	89.2
No	42	10.8
ASHN score distributions		
Medium	142	36.6
High	230	59.3
Ideal	16	4.1
Total	388	100

n: Sample Number, %: Percentage, x̄: Mean, SD: Standard Deviation

scale for assessing perceptions and attitudes towards the COVID-19 pandemic (p<0.05). No significant difference was found between total score of ASHN and genders (Table 2).

Table 2. Score Distributions of Perceptions and Attitudes towards COVID-19 Pandemic Scale sub-dimensions and Attitude Scale on Healthy Nutrition by Gender (n:388)

Perceptions and Attitudes towards COVID-19 Pandemic Scale sub-dimensions	Female (n:307)	Male (n:81)	
	x̄ ± SD	x̄ ± SD	p
Danger	2.46 ± 0.51	2.58 ± 0.60	0.065
Contagiousness	3.59 ± 0.79	3.57 ± 0.99	0.829
Complo	3.19 ± 0.87	3.26 ± 0.88	0.529
Environment	3.08 ± 0.64	3.12 ± 0.69	0.621
Belief	2.83 ± 0.80	2.84 ± 0.83	0.915
Macro	2.46 ± 0.81	2.76 ± 0.87	**0.006**
Personal	2.97 ± 0.67	3.04 ± 0.68	0.414
Inevitability	3.10 ± 0.73	2.95 ± 0.70	0.117
Cognitive avoidance	3.70 ± 0.91	3.53 ± 0.78	0.133
Avoiding common areas	3.22 ± 0.93	3.22 ± 0.85	0.957
Avoiding personal contact	2.38 ± 1.07	2.84 ± 1.09	**0.001**
ASHN total score	67.89 ±8.51	67.70±8.75	0.865

x̄: Mean, SD: Standard Deviation

Perceptions and Attitudes towards COVID-19 Pandemic Scale and ASHN score distributions according to COVID-19 status are given in Table 3. A significant difference was found only in the personal sub-

dimension of the scale for evaluating perceptions and attitudes towards the COVID-19 pandemic according to COVID-19 status ($p<0.05$). ASHN total score did not show a significant difference between genders ($p>0.05$).

Table 3. Score Distributions of Perceptions and Attitudes towards COVID-19 Pandemic Scale and Attitude Scale on Healthy Nutrition according to COVID-19 status (n:388)

Perceptions and Attitudes towards COVID-19 Pandemic Scale sub-dimensions	COVID-19 (n:149)	Non-COVID-19 (n:239)	
	$\bar{x} \pm SD$	$\bar{x} \pm SD$	p
Danger	2.44 ± 0.54	2.51 ± 0.53	0.214
Contagiousness	3.68 ± 0.84	3.53 ± 0.83	0.097
Complo	3.21 ± 0.88	3.19 ± 0.87	0.817
Environment	3.04 ± 0.71	3.11 ± 0.60	0.294
Belief	2.78 ± 0.78	2.86 ± 0.81	0.372
Macro	2.55 ± 0.83	2.51 ± 0.83	0.662
Personal	2.90 ± 0.72	3.04 ± 0.64	**0.035**
Inevitability	3.14 ± 0.79	3.02 ± 0.67	0.111
Cognitive avoidance	3.56 ± 0.95	3.72 ± 0.84	0.103
Avoiding common areas	3.11 ± 0.96	3.29 ± 0.88	0.063
Avoiding personal contact	2.38 ± 1.14	2.53 ± 1.06	0.181
ASHN total score	68.59±8.54	67.38±8.54	0.177

$\bar{x}$: Mean, SD: Standard Deviation

A positive very weak -level significant difference was found between the contagiousness (r: 0.151) and cognitive avoidance (r: 0.232) (weak-level) sub-dimensions of the scale for evaluating perceptions and attitudes towards the COVID-19 pandemic and ASHN ($p<0.05$). There was a very weak significant negative difference between the belief (r: -0.113) and avoidance of personal contact (r: -0.157) sub-dimensions and ASHN ($p<0.05$) (Table 4).

Table 4. The Relationship Between Perceptions and Attitudes towards COVID-19 Pandemic Scale and Attitude Scale on Healthy Nutrition (n:388)

Perceptions and Attitudes towards COVID-19 Pandemic Scale sub-dimensions	ASHN Total Score	
	r	p
Danger	0.020	0.693
Contagiousness	0.151	**0.003**
Complo	-0.039	0.447
Environment	-0.031	0.536
Belief	-0.113	**0.025**
Macro	0.007	0.892
Personal	0.076	0.134[*]
Inevitability	0.009	0.867
Cognitive avoidance	0.232	**0.000**
Avoiding common areas	-0.073	0.152
Avoiding personal contact	-0.157	**0.002**

Table 5 shows the comparison of the sub-dimensions of the scale for perceptions and attitudes towards COVID-19 pandemic according to the ASHN. Cognitive avoidance and avoiding personal contact sub-dimensions were found to have significant differences among ASHN categories.

The COVID-19 pandemic has brought about profound changes in people's lifestyles.[10] Particularly vulnerable groups such as young people have been affected by measures such as isolation, quarantine, and physical distancing, which have negatively impacted their physical and mental health.[11] Therefore, it is important to assess perceptions and attitudes towards COVID-19 to mitigate its effects on disadvantaged groups. In some studies female report greater

Table 5. Comparison of sub-dimensions of the Scale for the Perceptions and Attitudes towards the Coronavirus Pandemic according to the Attitude Scale on Healthy Nutrition (n:388)

Perceptions and Attitudes towards COVID-19 Pandemic Scale sub-dimensions	ASHN Groups	N	x̄	SD		SS	df	MS	F	p	Post-hoc (Tukey)
Danger	Medium	142	2.46	0.52	Between groups	0.57	2	0.286	1.005	0.367	
	High	230	2.49	0.54	Within groups	109.47	385	0.284			
	Ideal	16	2.66	0.58	Total	110.04	387				
Contagiousness	Medium	142	3.49	0.86	Between groups	2.848	2	1.424	2.047	0.130	
	High	230	3.63	0.82	Within groups	267.78	385	0.696			
	Ideal	16	3.83	0.83	Total	270.63	387				
Complo	Medium	142	3.22	0.85	Between groups	4.226	2	2.113	2.778	0.063	
	High	230	3.23	0.90	Within groups	291.74	385	0.758			
	Ideal	16	2.70	0.54	Total	295.97	387				
Environment	Medium	142	3.15	0.63	Between groups	1.64	2	0.821	1.978	0.140	
	High	230	3.04	0.66	Within groups	159.82	385	0.415			
	Ideal	16	3.27	0.43	Total	161.46	387				
Belief	Medium	142	2.94	0.86	Between groups	3.00	2	1.502	2.357	0.096	
	High	230	2.76	0.76	Within groups	245.33	385	0.637			
	Ideal	16	2.89	0.70	Total	248.33	387				
Macro	Medium	142	2.56	0.83	Between groups	1.43	2	0.716	1.035	0.356	
	High	230	2.48	0.83	Within groups	266.26	385	0.692			
	Ideal	16	2.75	0.92	Total	267.69	387				
Personal	Medium	142	2.95	0.64	Between groups	0.97	2	0.484	1.070	0.344	
	High	230	3.00	0.69	Within groups	174.17	385	0.452			
	Ideal	16	3.20	0.74	Total	175.14	387				
Inevitability	Medium	142	3.06	0.71	Between groups	0.76	2	0.380	0.729	0.483	
	High	230	3.08	0.74	Within groups	200.94	385	0.522			
	Ideal	16	2.86	0.52	Total	201.70	387				
Cognitive avoidance	Medium	142	3.47	0.88	Between groups	10.29	2	5.145	6.769	**0.001**	M-H[*]
	High	230	3.74	0.87	Within groups	292.61	385	0.760			M-I[*]
	Ideal	16	4.15	0.82	Total	302.90	387				
Avoiding common areas	Medium	142	3.28	0.86	Between groups	3.79	2	1.897	2.269	0.105	
	High	230	3.22	0.95	Within groups	321.82	385	0.836			
	Ideal	16	2.76	0.95	Total	325.61	387				
Avoiding personal contact	Medium	142	2.69	1.05	Between groups	18.82	2	9.409	8.201	**0.000**	M-H[*]
	High	230	2.40	1.10	Within groups	441.70	385	1.147			M-I[*]
	Ideal	16	1.67	0.85	Total	460.52	387				H-I[*]

[*] p<0.05, M:Medium, H:High, I:Ideal

fear and more negative expectations about the health consequences of COVID-19 compared to male.[11-13]

In a study of 300 university students in Spain, it was found that female exhibited a higher perception of danger than male.[11] In a cross-sectional study of 358 students from 14 universities in Turkey, it was determined that female and physically inactive students had a higher perception of stress.[6] Studies with university students in Switzerland and China have also shown that male have slightly lower anxiety scores than female.[14,15] In study conducted on nursing students in Turkey, it was found that female had a higher perception of stress.[16] In another study conducted with 754 university students in Turkey, it was found that the average scores of female's Perceptions and Attitudes towards COVID-19 Pandemic Scale contagiousness and avoiding personal contact sub- dimensions were higher.[17]

In this study, significant differences were found between the macro, avoiding personal contact and personal sub-dimensions of the COVID-19 perceptions and attitudes scale and gender and COVID-19 disease status. Contrary to the existing data, male and those who did not have COVID-19 disease were found to have higher COVID-19 perceptions and attitudes. Cultural norms and societal expectations may influence how individuals perceive and respond to health-related issues. Male, for example, might feel a stronger sense of responsibility to protect themselves and others during a pandemic, leading to higher perceptions and attitudes towards COVID-19.

The COVID-19 pandemic has changed individuals' perceptions of healthy nutrition.[18] In addition to the direct physiological effects of chronic stress, its psychological consequences can also cause a change in the perception of healthy nutrition.[19] When gender is taken into account, it has been shown that male may trust their intuition about nutrition more than female.[20] Especially during the COVID-19 pandemic, female are reported to have a lower perception of healthy eating.[21] A study conducted in the USA showed that students who reported lower diet quality during the COVID-19 period also reported poorer mental health and more stress.[22] In another study of 513 university students in Colombia, it was reported that students who consumed a pro-inflammatory diet had higher COVID-19 risk perception than the group who did not consume a pro-inflammatory diet.[23] In a study conducted on adults, stress scores were found to be higher in participants who reported unhealthy eating and worsening of their diet.[24] In another study investigating the effects of COVID-19 on healthy nutrition attitudes, female's ASHN scores were found to be significantly higher than male.[25] In a study examining the healthy eating attitude scores of university students during the COVID-19 period, although no difference was found between genders, it was found that the ASHN scores of those who engaged in regular exercise were significantly higher than those who did not.[26]

In this study, no significant difference was found between gender and having COVID-19 disease and healthy eating attitudes. Weak but significant associations were found between the four sub-dimensions of the COVID-19 perceptions and attitudes assessment scale (contagiousness, belief, cognitive avoidance and avoidance of personal contact) and ASHN. The lack of significant differences between genders in our study regarding COVID-19 disease and healthy eating attitudes could be attributed to several factors. One possibility is that in our sample, both males and females may have been equally exposed to information and messaging about COVID-19 and healthy nutrition, leading to similar perceptions and attitudes across genders. Additionally, cultural and societal norms regarding health behaviors may have influenced participants' responses, diminishing the impact of gender on these attitudes.

Moreover, individual differences within each gender group, such as personal experiences, beliefs, and lifestyle factors, could have played a role in shaping

perceptions of COVID-19 and healthy eating. It's also possible that the measures used to assess healthy eating attitudes may not have captured nuanced differences between genders effectively. Furthermore, the evolving nature of the pandemic and the varied responses of different populations to COVID-19-related information and guidelines may have contributed to the lack of significant gender differences in our findings. Future studies could delve deeper into these factors to better understand the complex relationship between gender, COVID-19 perceptions, and healthy eating attitudes.

CONCLUSION AND RECOMMENDATIONS

In line with the data obtained from the study; it was determined that having COVID-19 disease and gender affected COVID-19 perceptions and attitudes. In addition, weak but significant relationships were found between healthy eating attitudes and COVID-19 perceptions and attitudes. It is thought that students' attitudes towards healthy nutrition may change their perceptions and attitudes towards COVID-19. Encouraging educational programs focused on healthy eating habits could potentially influence individuals' perceptions and attitudes towards COVID-19, fostering a more proactive approach to disease prevention. Implementing interventions aimed at promoting healthier dietary choices among students may serve as a complementary strategy in shaping their attitudes and responses towards the COVID-19 pandemic.

Integrating nutritional education into broader public health initiatives may offer a holistic approach to addressing the multifaceted challenges posed by the COVID-19 pandemic, fostering resilience and promoting well-being across diverse populations. Future study should delve into how healthy eating attitudes relate to perceptions and attitudes toward COVID-19, clarifying the role of dietary factors in shaping public health behaviors.

Limitations of the study

The fact that the study was conducted during the period when the pandemic was more comfortable and the number of cases started to decrease is a limitation. In addition, since the study was single-center, it is limited in reflecting the situation across the country.

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