INVESTIGATION OF THE RELATIONSHIP BETWEEN COVID-19 PANDEMIC AND CONSUMPTION BEHAVIOR, NUTRITION HABITS, PHYSIOLOGICAL ACTIVITY AND COMPLEMENTARY MEDICINE PRACTICES IN DIFFERENT AGE AND PROFESSION GROUPS

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ABSTRACT

Purpose: This study, on this basis of Turkey, determined physiological factors affecting individuals' being infected by the COVID-19 virus.
Material and Methods: For this purpose, on 1104 individuals above the age of 18; necessary data are collected and assessed.
Results: The women went through COVID-19 more severely when compared with men. It is also seen that smokers were less infected by COVID-19. It is seen that sunbathing, exercises, sleeping and using minerals did not have positive effects against the disease; usage of plant-based agents did not have positive effects on individuals' resistance against COVID-19 on severeness of the disease and results obtained after usage of medicines; surprisingly, individuals, who used probiotics/prebiotics were in a disadvantageous position against COVID-19. It is seen that individuals had significant changes in their feeding habits. Participants mostly preferred organic animal-based products. It is also seen that there were significant changes in individuals' habits on consumption. It is determined that there was a decrease in the amount of shopping from supermarkets, while at the same time, there was an increase in the amount of shopping from online platforms.
Conclusion: The COVID 19 pandemic disrupted many known memories for other pandemics and led to unique new situations.

Keywords: COVID-19, nutrition habits, physiological activity, consumption behavior

INTRODUCTION

The new coronavirus SARS-CoV-2, considered one of the most challenging and worrying public health problems of recent times, first appeared in Wuhan, China in December 2019, and was soon named COVID-19 pandemic, which affected the entire world (1). As a result of the spread of the disease around the world, Turkey also took its place among the

countries affected by this Pandemic. The first case of COVID-19 was observed in Turkey in March, and the number of infected individuals increased over time (2). In line with the recommendations of public health experts to prevent and control the spread of COVID-19 disease, governments imposed various restrictions. Especially staying at home, social isolation and quarantine, which are restrictions related to free-circulation of people, became mandatory (3). After the occurrence of the first case in Turkey, strict measures began to be implemented, as in other countries (2). COVID-19 restrictions and measures taken to prevent and control the spread of the disease helped to reduce the rate of infection while causing sudden and radical changes in individuals' habits and lifestyles. Social isolation has changed individuals' lives, their feeding habits, physical activities, and behaviours and daily lives of consumers (3-5).

As a result of quarantines and restrictions, the physical activities of individuals were also restricted (6). An increase in sedentary behaviour and a decrease in energy consumption can be observed due to the decrease in physical activity levels. As a result of this, the occurrence or progression of chronic diseases, loss of muscle strength and mass, loss of immunity, and viral infection increase the potential risk (1). In addition, the necessity of people to stay in their homes during this period caused them to benefit from the sunlight less; and this negatively affected the production of vitamin D, whose biochemical synthesis depends on sunlight in living things. In the case of Vitamin D deficiency; the risk of being infected by viral diseases and the development of chronic diseases increases (7).Therefore, restrictions on physical activities had negative effects on the spread of COVID-19 disease.

Since COVID-19 disease spreads fast between individuals and since there is a high rate of death, it is necessary to provide protection against it and to develop treatment strategies. Lots of medicines were tried for treatment purposes during this pandemic period. Positive results were obtained in some medicine categories. Against this global health crisis, herbal medicines were also used to ensure control of the pandemic. Because it is known that natural products and herbal medicines have been used for centuries to prevent infections caused by viruses; and, in this pandemic, people use herbal products to protect themselves and to heal faster (7-12). But

there is not enough information in the literature about how effective it is and which plants are used.

For appropriate measures to be taken during the pandemic period; it is very important to examine the changes in the lifestyle of the society during the pandemic period and the effects of these changes on the pandemic period. But the number of studies on this subject is limited. For this purpose, in this study, measures taken to prevent the spread of the disease, effects of these measures on society's physical activity habits, consumption habits, shopping habits and feeding habits were studied; factors affecting the possibility of being infected by the COVID-19 virus were assessed. This study, on this basis of Turkey, aims to determine whether there is a relationship between consumption and feeding habits of adults and COVID-19; and to determine physiological factors affecting individuals' being infected by the COVID-19 virus.

MATERIAL AND METHODS
Under the scope of this section, the pattern, universe and sampling station of the study, data collection tools, data analysis methods and constraints of the study are presented.

The Pattern of the Research
This research is research of descriptive statistics from quantitative study patterns. Thanks to Descriptive Statistics, i.e., Definitive Statistics, researchers draw descriptive conclusions from obtained values. Also in this research, researchers reached descriptive judgments as a result of the data obtained.

Universe and Sampling Station
The universe of this research consists of Turkish consumers aged 18 and older. Since TUIK (Turkish Statistical Institute) data ver used while determining the number of the universe, it is seen that categorization is arranged as "0-14", "15-64" and "Above 65". Therefore, to determine the number of individuals aged 18 and above, the universe of this study is considered to be the same with 55.319.222 Voters (www.tuik.gov.tr), who had the right to vote during Public Voting on the date of 16th April 2017. The size of the Sampling Station is calculated as follows with ±5% Sampling Faults and 99% Reliability so that it shall represent the universe in the above-mentioned universe:

n= (Nz2pq) ÷(Nd2+z2pq), n= Number Of İndividuals Who Shall Be İncluded İn The Sampling Station, N= Number Of İndividuals İn The Target Audience, z=

Table 1. Regions and the numbers of participants by region

Regions (Level 1)	Citizen aged 18 and over	Ratio	Number of surveys to be done	Number of surveys conducted
TR1 Istanbul	10.518.057	0,19	127	120
TR2 West Marmara	2.601.756	0,05	33	25
TR3 Aegean	7.607.546	0,14	93	85
TR4 East Marmara	5.539.642	0,10	67	75
TR5 Western Anatolia	5.498.242	0,10	67	67
TR6 Mediterranean	6.980.599	0,13	86	63
TR7 Central Anatolia	2.722.082	0,05	33	33
TR8 West Black Sea	3.314.691	0,06	40	40
TR9 East Black Sea	1.917.559	0,03	20	23
TRA Northeast Anatolia	1.353.733	0,02	13	67
TRB Middle East Anatolia	2.382.445	0,04	27	206
TRC Southeast Anatolia	4.882.870	0,09	60	300
Total	55.319.222	1,00	666	1104

Level of Reliability, p= Probability of Occurrence of The Studied Event, q= 1-p (Probability of Not-Occurrence of The Studied Event), d= Accepted ± Sampling Fault Rate

$$((55.319.222) * (2,58)^2 * (0,50*0,50)) \div 55.319.222 * (0,05)^2 + (2,58)^2 * (0,50*0,50) = 666$$

Data Collection Tools

While preparing the survey questions researches conducted by were benefited from (13). Since it was not possible to have face to face surveys with individuals due to COVID-19 Pandemic and relevant restrictions, necessary data were collected from the participants using questionnaires through Google Survey on an online platform. The created questionnaire form was uploaded to the internet Environment through Google Form Application and applied. It also becomes difficult to determine the sampling station that shall represent the universe when the units found in the universe itself cannot be accurately determined. In the Snowball Sampling Method, in the beginning, the first unit (person or object) that can be accessed by the researcher and that is at the same time found in the universe of the research must be determined. The next unit shall be accessed by following the data obtained from these units; and it is aimed to form the sampling station that is considered to have the probability to constitute the universe, -and accordingly- to grow the volume of the sampling station, which consisted of one single unit in the beginning, just like a snowball. In this study, the Snowball Sampling Method is preferred in determining the individuals, who shall participate in the survey. When collecting data, primarily some Responders from 12 Statistical Regions were reached. These Responders were asked to fill out the questionnaire and have the people they know to fill out the questionnaire too. In this context, after the voluntary participation of individuals living in the provinces of the region, an online survey was conducted with a total of 1104 people, 665 men and 439 women. Regions and the number of participants by region are given in Table 1.

Data Analysis Method

Before the data obtained within the scope of the research is analyzed, incorrect data and extreme values shall be corrected to determine whether the data is suitable for analysis. The data obtained from the participants were then analyzed using the SPSS 21.0 Package Program and the relationships between individuals' shopping, feeding habits and the variables regarding their being infected by COVID-19 disease were tested by Chi-Square, Correlation Analysis, t-test, One-Way Anova Analysis, Simple Linear Regression Methods and the data obtained as a result of the analysis were arranged in the form of tables and presented in the section titled "Results".

Limitations of Study

During the research, one Limitation was determined. Since it was not possible to have face to face surveys with individuals due to COVID-19 pandemic and relevant restrictions, necessary data were collected from the participants using questionnaires through Google Survey on an online platform.

Table 2. Statistical results of hypotheses

Variable	Factor	Results	
Gender	Cigarette	Men smoke more than women	$(t_{1101}=6,171, p<,05)$
	Covid 19 disease severity	Women have survived the COVID-19 disease more severely than men.	$(t_{258}=-2,010, p<,05)$
	Drug use	Men used more drugs than women.	$(t_{258}=2,031, p<,05)$.
	Frequency of drug use	There was no difference between men and women in terms of drug use frequency.	$(t_{159}=1,443, p>,05)$
	Result of drug therapy	There was no difference between men and women in terms of results from drug therapy.	$(t_{159}=,239, p>,05)$
	Herbal methods used	There was no difference between men and women in terms of the results of the herbal methods used.	$(t_{128}=1,308, p>,05)$
	Success status of herbal treatment method	There was no difference between men and women in terms of the success of the herbal treatment method.	$(t_{969}=-1,493, p>,05$
	Use of vitamins	There was no difference between men and women in terms of vitamin use status.	$(t_{1058}=1,093, p>,05)$.
	Mineral use	There was no difference between men and women in terms of mineral usage status.	$(t_{349}=1,431, p>,05)$.
	Eating habits	Women's eating habits have changed more than men.	$(t_{881}=-3,242, p<,05)$.
	Animal food consumption status	More animal food consumption of women than men was affected.	$(t_{1101}=-3,019, p<,05)$.
	Covid-19 disease transmission from animal food	Women believe more than men in the idea that the COVID-19 disease is transmitted from animal food.	$(t_{1101}=-3,019, p<,05)$.
	Prebiotic/Probiotic	Women used more Prebiotics/Probiotics than men.	$(t_{1101}=-2,337, p<,05)$.
	Sunbathing	Men sunbathe more than women.	$(t_{1101}=11,751, p<,05)$.
	Exercise	Men exercised more than women.	$(t_{1101}=4,709, p<,05)$.
	Sleep	Women slept more than men.	$(t_{1101}=-6,424, p<,05)$.
Age	Cigarette	Those over the age of 56 smoke less than other age groups. There was no significant difference between other age groups.	$(F_{(4, 1098)}=3,752; p<,05)$.
	Covid 19 disease severity	Those over the age of 56 had the disease more severely than those between the ages of 18-25. There was no significant difference between other age groups.	$(F_{(4, 255)}=2,987; p<,05)$.
	Drug use	Those over the age of 56 used more drugs than those aged 18-25, 26-35 and 36-45. There was no significant difference between other age groups.	$(F_{(4, 1086)}=4,864; p<,05)$.
	Frequency of drug use	Those over the age of 56 used drugs more frequently than those aged 18-25, 26-35 and 36-45. There was no significant difference between other age groups.	$(F_{(4, 1098)}=3,752; p<,05)$
	Result of drug therapy	There was no difference between different age groups in terms of the results obtained in drug treatment.	$(F_{(4, 156)}=1,750; p>,05)$.
	Herbal methods used	There was no difference between different age groups in terms of using herbal methods.	$(F_{(4, 125)}=,922; p>,05)$.

Table 2. Continue

	Success status of herbal treatment method	Those between the ages of 36-45 find herbal treatment methods more successful than those between the ages of 18-25. There was no significant difference between other age groups.	$(F_{(4, 966)}=2,994;$ $p<,05)$
	Use of vitamins		$(F_{(4, 1055)=}1,765;$ $p>,05)$.
	Mineral use	There was no difference between different age groups in terms of vitamin use.	$(F_{(4, 346)=},434;$ $p>,05)$.
	Eating habits	There was no difference between different age groups in terms of mineral use.	$(F_{(4, 878)=}7,424;$ $p<,05)$
	Animal food consumption status	The eating habits of those aged 18-25 changed more than those aged 26-35, 36-45 and 46-55. There was no significant difference between other age groups.	$(F_{(4, 1098)=}5,687;$ $p<,05)$.
	Covid-19 disease transmission from animal food	Those between the ages of 18-25 are more likely to agree with the idea of contagion of the disease in animal foods than those between the ages of 46-55. There was no significant difference between other age groups.	$(F_{(4, 1098)=}5,464;$ $p<,05)$.
	Prebiotic/Probiotic	Those aged 18-25 took more Prebiotics/Probiotics than those aged 46-55. There was no significant difference between other age groups.	$(F_{(4, 1098)=}3,360;$ $p<,05)$
	Sunbathing	There was no difference between different age groups in terms of sunbathing.	$(F_{(4, 1098)=},798;$ $p>,05)$
	Exercise	There was no difference between different age groups in terms of exercise.	$(F_{(4, 1098)=}1,687;$ $p>,05)$
	Sleep	Those between the ages of 18-25 sleep more than those in all other age ranges. There was no significant difference between other age groups.	$(F_{(4, 1098)=}20,940;$ $p<,05)$
	Cigarette	Employees in the private sector smoke more than public employees, housewives and students. There was no significant difference between other occupational groups.	$(F_{(5, 1097)=}9,843;$ $p<,05)$
	Drug use	Public employees used more drugs than students. There was no significant difference between other occupational groups.	$(F_{(4, 255)=}4,833;$ $p<,05)$
	Frequency of drug use	There was no difference between different occupational groups in terms of drug use frequency.	$(F_{(4, 156)=}1,656;$ $p>,05)$
	Result of drug therapy	There was no difference between different occupational groups in terms of the results obtained in drug treatment.	$(F_{(4, 156)=},409;$ $p>,05)$
	Herbal methods used	There was no difference between different occupational groups in terms of using herbal methods.	$(F_{(4, 156)=}2,056;$ $p>,05)$
	Success status of herbal treatment method	Housewives found the herbal protection and treatment method more successful than those who did not work. There was no significant difference between other occupational groups.	$(F_{(5, 965)=}2,354;$ $p<,05)$
	Use of vitamins	There was no difference between different occupational groups in terms of vitamin use.	$(F_{(5, 1054)=}2,181;$ $p>,05)$
Job	Mineral use	There was no difference between different occupational groups in terms of mineral usage.	$(F_{(5, 345)=}1,204;$ $p>,05)$
	Eating habits	The dietary habits of retirees have changed less than in all other occupational groups. Nutritional habits of students have changed more than public and private sector employees. There was no significant difference between other occupational groups.	$(F_{(5, 877)=}7,149;$ $p<,05)$

Table 2. Continue

	Animal food consumption status	Students; state of being affected animal food consumption was higher than the unemployed, public and private sector employees. Public employees were more affected than those who could not work. Private sector workers were more affected than those who could not work. Housewives were more affected than those who could not work. There was no significant difference between other occupational groups.	$(F_{(5, 1097)}=8,151; p<,05)$
	Covid-19 disease transmission from animal food	Students are more likely to agree with the idea that the disease is transmitted in animal foods compared to public employees. There was no significant difference between other occupational groups.	$(F_{(5, 1097)}=2,885; p<,05)$
	Prebiotic/Probiotic	Students took more Prebiotics/Probiotics than public employees. There was no significant difference between other occupational groups.	$(F_{(5, 1097)}=3,766; p<,05)$
	Sunbathing	Housewives and students sunbathe less than those who cannot work, especially sector and public employees. Employees in the private sector sunbathe more than public employees and students. There was no significant difference between other occupational groups.	$(F_{(5, 1097)}=9,049; p<,05)$
	Exercise	There was no difference between different occupational groups in terms of exercise status.	$(F_{(5, 1097)=}1,372; p>,05)$
	Drug use	Students, in particular, sleep more than industry and public employees. There was no significant difference between other occupational groups.	$F_{(5, 1097)=1}9,378; p<,05)$
Education Status	Cigarette	Postgraduate graduates smoke less than secondary and primary school graduates. There was no significant difference between the other education level groups.	$(F_{(4, 1098)}=4,265; p<,05)$
	Covid 19 disease severity	There was no difference between different education level groups in terms of the severity of COVID-19 disease.	$(F_{(4, 255)}=1,482; p>,05)$
	Drug use	There was no difference between different education level groups in terms of drug use status.	$(F_{(4, 255)=},123; p>,05)$
	Frequency of drug use	There was no difference between different education level groups in terms of drug use frequency.	$(F_{(4, 156)}=1,232; p>,05)$
	Result of drug therapy	There was no difference between the different education level groups in terms of the results obtained in drug treatment.	$(F_{(4, 156)}=1,487; p>,05)$
	Herbal methods used	There was no difference between different education level groups in terms of using herbal methods.	$(F_{(4, 125)=},802; p>,05)$
	Success status of herbal treatment method	There was no difference between the groups of different education levels in terms of the success of the herbal treatment method.	$(F_{(4, 966)}=1,571; p>,05)$
	Use of vitamins	Postgraduate graduates used more vitamins than associate degree graduates. There was no significant difference between the other education level groups.	$(F_{(4, 1055)}=2,525; p<,05)$
	Mineral use	Primary education graduates used more minerals than secondary education and associate degree graduates. There is no significant difference between the other education level groups.	$(F_{(4, 346)=}3,801; p<,05)$
	Eating habits	There was no difference between different education level groups in terms of nutritional habits.	$(F_{(4, 878)}=2,217; p>,05)$

Table 2. Continue

	Animal food consumption status	Primary school graduates were less affected by animal food consumption compared to all other education level graduates. There was no significant difference between the other education level groups.	$(F_{(4, 1098)}=4,365; p<,05)$
	Prebiotic/Probiotic	There was no difference between different education level groups in terms of prebiotic/probiotic intake status.	$(F_{(4, 1098)}=,261; p>,05)$
	Sunbathing	There was no difference between different education level groups in terms of sunbathing status.	$(F_{(4, 1098)}=,626; p>,05)$
	Exercise	There was no difference between different education level groups in terms of exercise status.	$(F_{(4, 1098)}=,281; p>,05)$
	Sleep	Postgraduate graduates sleep less than associate and undergraduate graduates. There was no significant difference between the other education level groups.	$(F_{(4, 1098)}=10,042; p<,05)$
Cigarette	Status of contracting Covid 19 disease	Those who say they have COVID-19 disease smoke less than those who say they do not have COVID-19 disease. There was no significant difference between the other groups.	$(F_{(2, 1010)}=4,173; p<,05)$
	Severity of contracting Covid 19 disease	It has been found that smoking status (frequency) has no effect on the severity of COVID-19 disease.	$(β=-,113; p>,05)$
	On the result of drug treatment	It was found that smoking status (frequency) had no effect on the outcome of drug therapy.	$(β=,047; p>,05)$
Frequency of Medıcatıon	Severity of contracting Covid 19 disease	It has been found that the frequency of drug use has no effect on the severity of COVID-19 disease	$(β=,031; p>,05)$
	On the result of drug treatment	It has been found that the frequency of drug use has a positive effect on the outcome of drug treatment.	$(β=,200; p<,05).$
Herbal Drug Use Condıtıon	Status of contracting Covid 19 disease	There was no difference in the status of getting COVID-19 disease between those who use herbal medicine and those who do not.	$(F_{(2, 127)}=,404; p>,05)$
	Severity of contracting Covid 19 disease	It has been found that the use of herbal medicine has no effect on the severity of COVID-19 disease.	$(β=-,107; p>,05)$
	On the result of drug treatment	It has been found that the use of herbal medicine has no effect on the result of drug treatment.	$(β=-,334; p>,05)$
Vitamin Use	Status of contracting Covid 19 disease	Those who say that they have COVID-19 disease have taken more vitamins than those who say that they do not have Covid 19 disease and do not know whether they have been caught. A significant difference was found between the other groups.	$(F_{(2, 1057)}=44,403; p<,05)$
	Severity of contracting Covid 19 disease	It has been found that the use of vitamins has a positive effect on the severity of COVID-19 disease.	$(β=,261; p<,05)$
	On the result of drug treatment	It was found that the use of vitamins had no effect on the outcome of drug treatment.	$(β=,090; p>,05)$
Vitamın Use Frequency	Status of contracting Covid 19 disease	No difference was found among those with different frequency of use of vitamins in cases of COVID-19 disease.	$(F_{(2, 348)}=,188; p>,05).$
	Severity of contracting Covid 19 disease	It has been found that the frequency of vitamin use has no effect on the severity of COVID-19 disease.	$(β=-,062; p>,05).$
	On the result of drug treatment	It has been found that the frequency of vitamin use has a negative effect on the outcome of drug therapy.	$(β=-,193; p<,05)$

Table 2. Continue

	Status of contracting Covid 19 disease	There was no difference in the status of contracting COVID-19 disease between mineral users and non-users.	$(F_{(2, 348)}=2{,}278;$ $p>{,}05)$
	Severity of contracting Covid 19 disease	It has been found that mineral use has no effect on the severity of COVID-19 disease.	$(\beta=-{,}071;$ $p>{,}05)$
Use Of Mıneral	On the result of drug treatment	It has been found that the use of minerals has no effect on the result of drug treatment.	$(\beta=-{,}039;$ $p>{,}05)$
Eating Habits	Status of contracting Covid 19 disease	Those who say they have COVID-19 disease have changed their eating habits more than those who say they do not have Covid 19 disease. There is no significant difference between the other groups.	$(F_{(2, 880)}=5{,}915;$ $p<{,}05)$
	Severity of contracting Covid 19 disease	It has been found that changing dietary habits has a positive effect on the severity of COVID-19 disease.	$(\beta={,}205;$ $p<{,}05)$
	On the result of drug treatment	It was found that changing the eating habits had no effect on the outcome of drug treatment.	$(\beta=-{,}045;$ $p>{,}05)$
Use of Prebiotics/ Probiotics	Status of contracting Covid 19 disease	Those who say that they have COVID-19 disease have used more prebiotics/probiotics than those who say that they do not have COVID-19 disease and do not know whether they have been caught. There is no significant difference between the other groups.	$(F_{(2, 1100)}=10{,}061;$ $p<{,}05)$
	Severity of contracting Covid 19 disease	It has been found that the use of prebiotics/probiotics has no effect on the severity of COVID-19 disease.	$(\beta=-{,}019;$ $p>{,}05)$
	On the result of drug treatment	It was found that the use of prebiotics/probiotics had no effect on the outcome of drug therapy.	$(\beta={,}140;$ $p>{,}05)$
Prebiotic/ Probiotic Use Frequency	Status of contracting Covid 19 disease	No difference was found among those with different frequency of use of prebiotics/probiotics in the case of contracting COVID-19 disease.	$(F_{(2, 531)}={,}923;$ $p>{,}05)$.
	Severity of contracting Covid 19 disease	It has been found that the frequency of prebiotic/probiotic use has no effect on the severity of Covid disease.	$(\beta=-{,}042;$ $p>{,}05)$
	On the result of drug treatment	It was found that the use of prebiotics/probiotics had no effect on the outcome of drug therapy.	$(\beta={,}018;$ $p>{,}05)$
Sunbathing Condition	Status of contracting Covid 19 disease	There was no difference in the status of contracting COVID-19 disease among those with different sun exposure times.	$(F_{(2,1100)}=1{,}083;$ $p>{,}05)$.
	Severity of contracting Covid 19 disease	Sunbathing has been found to have a negative effect on the severity of COVID-19 disease.	$(\beta=-{,}154;$ $p<{,}05)$

Table 2. Continue

	On the result of drug treatment	It has been found that sunbathing has no effect on the result of drug treatment.	(β=,035; p>,05)
Exercise	Status of contracting Covid 19 disease	There was no difference in the status of contracting COVID-19 disease among those with different exercise frequencies.	(F$_{(2, 1100)=}$2,936; p>,05).
	Severity of contracting Covid 19 disease	It was found that exercise had no effect on the severity of COVID-19 disease.	(β=-,018; p>,05)
	On the result of drug treatment	It was found that exercise had no effect on the outcome of drug therapy.	(β=-,129; p>,05)
Sleep	Status of contracting Covid 19 disease	There was no difference in the status of contracting COVID-19 disease among those with different sleep durations.	(F$_{(2, 1100)=}$,037; p>,05).
	Severity of contracting Covid 19 disease	Sleep has been found to have no effect on the severity of COVID-19 disease.	(β=-,022; p>,05).
	On the result of drug treatment	It was found that sleep had no effect on the outcome of drug treatment.	(β=-,010; p>,05).

Ethical Approval

Ethics committee approval of the study was obtained from Harran University Clinical Research Ethics Committee (HRU/21.08.21; 12.04.2021).

RESULTS

Demographics

As part of the study, some demographics of consumers, who participated in the survey, were examined and presented below with the help of Figure 1, Figure 2, Figure 3.

When it comes to the demographic data, which is the first stage of the survey, it is seen that the distribution of Responders by gender was: men with a percentage of 60.3% (665 people) and women with a percentage of 39.7% (438 people). When it comes to the age of the participants, it is seen that most of the participants were in the 18-25-year-old range with a percentage of 37.7% (416 people). Other age categories were as follows: 26-35-year-old range with a percentage of 31.0% (342); 36-45-year-old range with a percentage of 17.8% (196); year-old range with a percentage of 8.9% (98); 56-and-Above old range with a percentage of 4.6% (51).

When we consider the educational backgrounds of the participants, it can be seen that the majority of the participants -with a percentage of 49.8% (549 people)- consisted of people with bachelor's degree.

On the other hand, when we consider the professional distribution of the participants, it is seen that -with a percentage of 38.5% (425 people)- public sector employees participated in the survey.

When we consider the income status of the participants of the survey, unemployed people with a percentage of 29.3% (323 people) stood out in the first place; with a percentage of 21.3% (235 people), whose income was 7001 TRY and above, stood out in the second place. The reason why the "I do not have a job" option was checked by the majority of the participants is considered to be the existence of participants with bachelor's degree with a percentage of 49.8% (549 people).

On the other hand, in terms of the number of participants, TRC South-East Anatolia Region came up in the first position with a percentage of 38.6% (426) and TRB Middle East Anatolia Region came up in the second position with a percentage of 18.7% (206). When compared with the other Regions, there were more participants from TRC South-East Anatolia and TRB Middle East Anatolia Regions and this may be the result of the region, in which the Researchers live, and the environment, in which they interact. Because, since this study is conducted by using Snowball Sampling Method, it is common for such a result to occur.
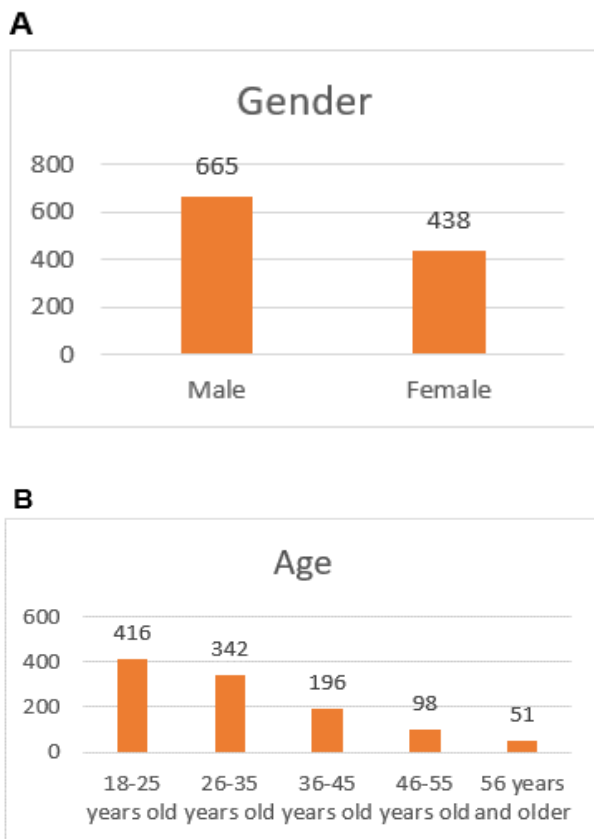
A

B

Figure 1. Characteristics of surveyed individuals A) Gender status B) Age groups

DISCUSSION
The Relationship Between Covid-19 Pandemic and Feeding Habits, Physiological Activities, Complementary Medical Practices

This study, which is conducted in Turkey -one of the countries where the COVID-19 pandemic was very intense-, revealed very interesting results regarding physiological data such as sunbathing, exercises and pharmacological data such as the use of medical herbs, vitamins and probiotics. Moreover, the study revealed very interesting results of COVID 19 disease on the feeding habits of people and animal-food consumption habits. Results are presented in Table 2. In this way, contrary to many claims shouted out in the media, results, which could clarify the speculations that clouded the minds of the public, were obtained. In this section, we shall try to discuss the most prominent of them in a detailed way.

According to our Study results, contrary to what is widely known, when compared with men, women's experience of COVID-19 disease is more severe (t258=-2,010, p<,05). As a result of a systematic examination (meta-analysis) carried out by Ortalan et al on 950 Literature Data, it is reported that men are more sensitive to SARS-CoV2 infection and -when compared with women- men's experience of the disease is more severe (14). This can be explained by the result "Men used more drugs than women (t258=2,031, p<,05)" that we obtained at the end of our survey. Because it is already known that the use of medicine has positive effects on the course of the disease (15).

This interesting situation can be explained by the fact that smoking has advantageous effects against being infected by COVID-19 disease; and, the number of male survey participants, who smoked, was more than the number of female survey participants, who smoked (t1101=6,171, p<,05). According to our study results, those, who say they were infected by COVID-19, smoke less than those, who say they were not infected by COVID-19 (F(2, 1010)=4,173; p<,05). This is one of the most interesting results. In other words, smoking constitutes an advantage in terms of not being infected by COVID-19. This belief became widespread among the public and there was an increase in the number of those, who started smoking along with the pandemic (16). Moreover, results such as "Smoking status (frequency) is proven to not have effects on severity of suffering from COVID-19 disease (β=-,113; p>,05)" and "Smoking status (frequency) is proven to not have effects on the consequences of the use of drugs" conflict with the information found in the literature (17). In the literature, it is reported that smoking has a fairly dominant effect on the severity of COVID-19 disease and that the mortality rate in smokers is higher (when compared with non-smokers) (18). But the results obtained by us are exactly in the opposite direction. Probably, as a result of smoking, lung cell surfaces are damaged and the virus's attachment probability is thus weaker (17). As a result of a meta-analysis conducted by Farsalinos et al by examining 432 Articles; smoking down-regulates Angiotensin-Converting Enzyme 2 (ACE2) and thus it decreases the risk of being infected by the virus. These results make us think that smoking might have a protective effect on sensitivity to SARS-CoV-2 Infection (19).

According to our study results, contrary to our expectations, exposure to sunlight does not have any positive effects in terms of being infected by COVID-19 (F(2, 1100)=1,083; p>,05); on the contrary, it is discovered that being exposed to sunlight harms the severity of COVID-19 disease. In normal conditions, since Vitamin D increases in the body thanks to
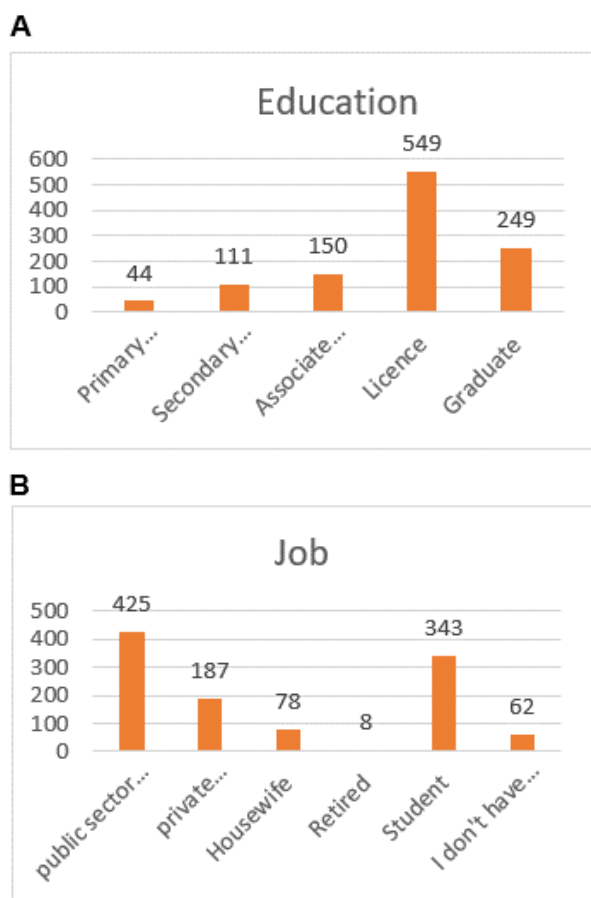
A

B

Figure 2. Characteristics of the individuals participating in the survey A) Education B) Occupational status

received sunlight, it is expected to have positive effects on the immunity system (20). But, although sunlight is an important source of Vitamin D, it is not a sufficient source on its own. Indeed, studies conducted in Brazil have shown that despite the dense exposure to sunlight, hypovitaminosis D is quite common (21). Because behavioural and cultural factors that affect lifestyle can also reduce the ability to synthesize vitamin D through exposure to sunlight. People with long indoor working hours and ethnic groups, who formally require heavy and veiled clothing, may have reduced their capacity to synthesize vitamin D from ultraviolet B (UVB) radiation (21). This may be valid for Turkey too.

According to our study results, men were exposed to sunlight more than women ($t_{1101}=11,751$, $p<,05$). This result can be explained by the fact that the vast majority (18%) of female participants were housewives, and housewives (generally) spend a greater part of their time at home. Compared to professional groups, housewives, students and

unemployed people were less exposed to sunlight than the employees of the private sector and public employees ($F_{(5, 1097)}=9,049$; $p<,05$).

According to our study results, it is also found that doing exercises does not have a positive relationship with the severity of the disease and with being infected by the Virus. Because "No difference is determined between those with different exercise frequencies in terms of being infected with COVID-19 disease ($F_{(2, 1100)}=2,936$; $p>,05$)". In addition, doing exercises is found to have no effects on the severity of COVID-19 Disease ($\beta=-,018$; $p>,05$) and the outcome of drug therapy ($\beta=-,129$; $p>,05$). Even the most regular athletes were infected by this Virus with the same frequency as other people and it is reported that they suffered severely from the disease (22). According to our study results, men exercised more than women ($t_{1101}=4,709$, $p<,05$). This may be linked to this result: "Women experienced COVID-19 disease more severely than men ($t_{258}=-2,010$, $p<,05$)". So, exercise has an indirect relationship with the severity of the disease. Indeed, exercise has been reported in the literature to activate the immune system and its anti-viral defences (23). But another result we obtained at the end of this survey seems to contradict the result: "Doing exercises does not affect the severity of COVID-19 disease ($\beta=-,018$; $p>,05$)''.

According to our study results, Those over 56 years of age used more drugs than the 18-25 -, 26-35-and 36-45 age groups. No meaningful difference was determined between other age groups ($F_{(4, 1086)}=4,864$; $p<,05$). This result shows that young people and adults are more cautious about drugs and generally avoid drug use. However, as a result of this survey study, it is found out that the frequency of drug use has a positive effect on the outcome of drug treatment ($\beta=,200$; $p<,05$). Moreover, data from the literature confirm the beneficial effects of the use of drugs such as Favipravir and Remdesivir, which were used in Turkey during this pandemic period (24, 25). Therefore, it is an unconscionable and quite dangerous situation for young age groups to avoid medication (drugs). We can say that this conclusion is created in the minds of people by speculations on social media about drugs. It is known that said age groups use social media more effectively and are more exposed to false information spread through social media.

According to our study, very interesting results regarding the use of herbal drugs during the Pandemic stood out. Women (69.72%) used more
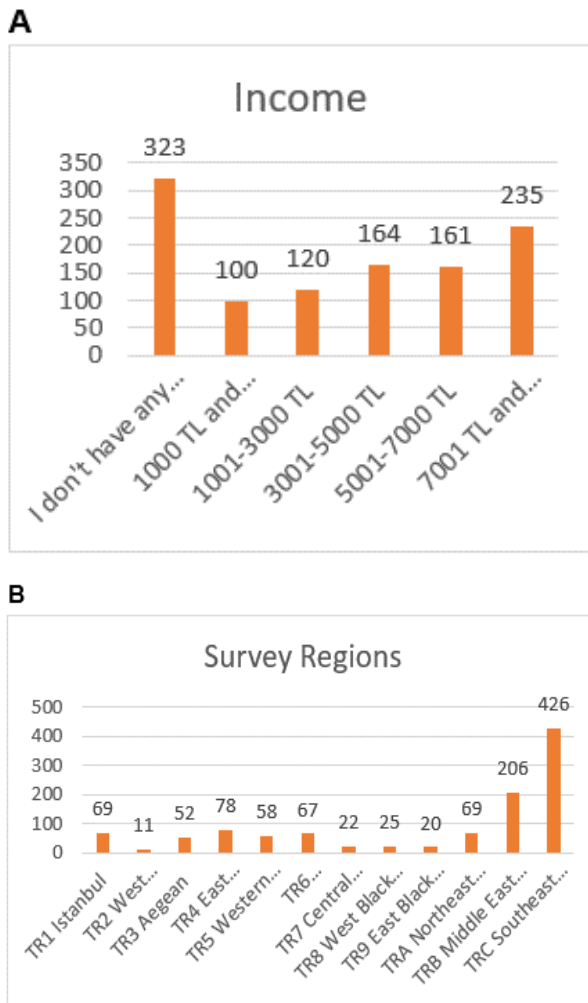
Figure 3. Characteristics of the individuals participating in the survey A) Income B) Region of residence

herbal drugs when compared with men (30.28%). There are meaningful differences in the point of use of herbal drugs between age groups. As age progresses, interest in herbal contents increases too. In the youngest group (18-25), who participated in the survey, the herbal drug use percentage was 58.36%, while in the oldest group (56 Years and above), this percentage increased up to 96.58%. Educational Background has also been a determining factor in the point of usage of herbal drugs. In the Primary Education group, the use percentage of herbal drugs was 94.32%, while in the bachelor's degree group this rate fell to 48.26%, but in the post-Graduate group, it rose again back to 80.13%. In terms of the preferred type of herbs, male participants preferred ginger (73.53%) and thyme (65.06%), while women preferred mint (58.18%) and chamomile (55.56%). The younger group preferred daisies the most with a use percentage of 55.56%, while the older group

reported that they never used daisies. This shows that there are serious differences between generations in terms of preferred herbs. To understand whether participants answered survey questions carefully, the option "I did not use any kind of herbs" was repeated in two separate places on the questionnaire; and similar answers were given in all groups in both categories.

This study provides information that is valuable in terms of revealing the demographics of people, who used herbal agents. These obtained data are quite important when it comes to getting to know the segment in which the relevant products shall be marketed.

When we assess the success achieved through herbal treatments; it is found out that the use of herbal agents did not have any positive effects on being infected with COVID-19 disease, the severity of the disease and results obtained after drug-included medical treatments ($F_{(2, 127)}=,404$; $p>,05$). This is also a very interesting result and coincides with the data in the literature. It is reported in the literature that the healing process from Mild-Moderate COVID-19 disease can be supported by integrative medicine strategies (26, 27).

According to the results of our study, those, who told they were infected by the COVID-19 virus, took more vitamins than those, who told they were not infected by the COVID-19 virus and who did not know if they were infected or not ($F_{(2, 1057)} =44,403$; $p<,05$). In other words, those who were infected by the Virus tended to use vitamins. Again, our results show that vitamin use has a positive effect on the severity of COVID-19 disease ($\beta=,261$; $p<,05$). This result complies with widely believed information and literature data (28). Revagnani et al examined 48 studies regarding this topic; and, it is reported that none of the examined documents recommended Vitamin D Supplements for the treatment of COVID-19 (29). Vitamins have an important role in the body's immunopathological and physiological response in addition to the body's vital functions. Studies have shown that adding vitamins and reducing inflammatory circulation indicators had positive effects on the treatment of patients (28). It is clear that more experimental studies need to be conducted to clarify this issue. But our study results revealed an issue that should be considered about the frequency of usage of vitamins. According to results obtained by us, it is found that the frequency of usage of vitamins does not affect the severity of COVID-19 disease ($\beta=-$
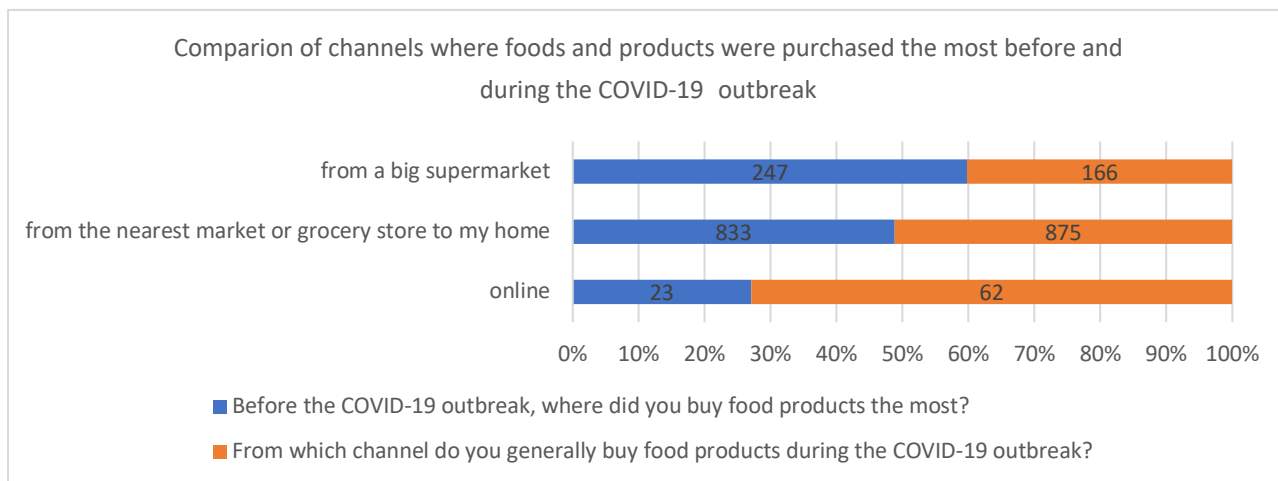
Figure 4. Comparison of the channels where food products were purchased the most before and during the COVID-19 outbreak

,062; p>,05); and the frequency of usage of vitamins harms the outcome of drug treatment (β=-,193; p<,05).

According to our study results, there were no differences between those, who used and did not use minerals, in terms of the condition of COVID-19 disease (F(2, 348)=2,278; p>,05). It is found that usage of minerals does not have effects on the severity of COVID-19 disease (β=-,071; p>,05). Again, it is found that the use of minerals has no effects on the outcome of drug treatment (β=-,039; p>,05). These results were also found to be contradictory to the literature data. It is reported that mineral supplements positively affect the immune system in viral infections, long-term mineral deficiency can increase the level of ACE2 in Lower Respiratory Tract Cells, and this shall increase the sensitivity and pathogenicity for SARS-CoV-2 Infection (20). According to the results of our study, it is surprisingly understood that those, who use probiotics/prebiotics, are in a disadvantaged position from the point of being infected by the COVID-19 virus. Because "Those, who told they were infected by the COVID-19 virus, took more probiotics/prebiotics than those, who told they were not infected by the COVID-19 virus and who did not know if they were infected or not (F (2, 1100) =10,061; p<,05)''. This can be explained by the fact that, at the beginning of the pandemic period, authorities encouraged the use of prebiotics/probiotics; they said that people, who used prebiotics/probiotics, could feel themselves in a safer position, thus those people decreased their strictness on the issue. But there are clinical studies that report the opposite of our results.

In a study, it was reported that the use of probiotics in combination with treatment during COVID-19 disease positively affected the clinical course of the Disease and shortened the recovery time (30). In another study, it is reported that oral probiotic uses along with treatment during COVID-19 disease reduced the risk of developing Respiratory Failure eight times; caused a serious improvement in digestive system symptoms; and reduced treatment times in the Intensive Care Unit. According to our study results, during the pandemic period, when compared with men, women used more Prebiotics/Probiotics (t1101=-2,337, p<,05). These results suggest that women are better customers for the Prebiotic/Probiotic market and that this result should be taken into account for the development of marketing strategies.

According to our study results, unlike what is known for other viral infections, it is understood that sleep also does not have a positive relationship with being infected by the virus (F(2, 1100)=,037; p>,05), the severity of the disease (β=-,022; p>,05) and consequences of medical drug-based treatments.

Reporting that there is a risk of SARS-CoV-2 transmission from animal foods to humans has had an impact on the behaviour of people consuming animal foods and the idea that this disease is transmitted from animals to humans. In particular, the fact that the SARS-CoV-2 virus was first reported to have originated from a seafood market in Wuhan, China, where wild animals were illegally sold, lead to this idea (31). Also, it is recently reported in mink farms in various countries such as Denmark, the US, the Netherlands and Spain that SARS-CoV-2 and its
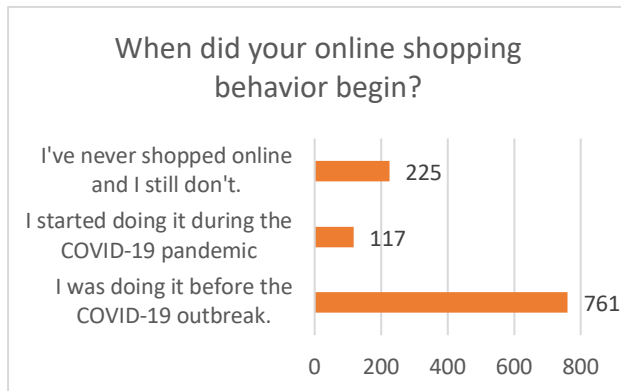
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Figure 5. When the behavior of shopping online began.

variants can transmit between live animals and humans (32). It is also reported that frequent outbreaks of COVID-19 disease were seen among employees in slaughtering and meat processing plants in different countries, such as Canada, Brazil, Germany and Ireland. Reports of COVID-19 cases at the end of the meat and seafood supply chain, such as Food Markets and grocery stores, statements addressing the fact that packaging environments can be contaminated by SARS-CoV-2 during slaughtering, chopping and packaging phases of infected animals, statements addressing the possibility that the virus can stay alive for a long time on such packages has an effect on the habit of animal-food consumption and on the idea that this Virus can transmit from animals to humans (33-36). The results of this study also support these findings. According to the results of our study, 1.6% of Responders strongly agree with the idea that the COVID-19 disease is transmitted from animal foods; 4.8% agree, 40.4% strongly disagree, 31.3% disagree, and 21.8% disagree with the said idea. Also, women, those aged 18 to 25, and students agree more with this idea. According to the answers to questions about the effects on animal food consumption during the COVID-19 outbreak: 0.7% of participants were completely affected, 3.9% were over-affected, 18.1% were moderately affected, 24.3% were under-affected, 53% were not affected at all. In addition, the effects on consumption of animal foods were more commonly observed in women, people between the ages 18 and 25, students and primary school graduates Table 2. A decrease in animal food consumption during the COVID-19 outbreak can have negative effects on the recovery phase of the disease. Because in a study they conducted, Cobre et al. (37) reported that animal products contribute significantly to the recovery from

COVID-19 disease. The reason for this is that animal foods contain high calories; protein and they are the main sources of micro-nutrients.

Nutrition plays an important role in the development and protection of the immunity system. Nutrition deficiencies can also endanger the immune system and increase susceptibility to infections. Instead, a good diet can prevent the progression of diseases and the weakening of the immune system (38). During the COVID-19 pandemic, it is also constantly stated by the authorities that a healthy diet is necessary to strengthen the immune system of a person and to prevent such person's being infected by the Virus (39). In a study conducted by Şen and Şimşek (40), according to the results of frequency analysis on data obtained from 1258 participants, it is found that significant changes in consumers' feeding habits occurred; and this change was reported to be the consumption of immune system-strengthening foods. As a matter of fact, in this study conducted by us, it is observed that the feeding habits of the participants changed. The question "How much did your feeding habits change during the COVID-19 pandemic?" was answered by the participants as follows: 3.3% changed completely, 7.2% changed significantly, 20.4% changed moderately, 23.6% changed little, 45.7% did not change at all. 18.8% of participants who changed their feeding habits preferred ready-made industrial foods while the remaining 81.2% preferred organic foods. In addition, the most preferred animal-based foods were homemade yoghurt (82.2%), homemade cheese (43.4%) and cage-free chicken eggs (39.9%). We believe that the reason for this is the idea that ready-made industrial foods may contain food additives and have negative health effects. But contrary to the results obtained by us, Kutlu et al (41) reported that the tendency of people to packaged foods increased due to their belief that packaged foods are safe. During this period, in terms of meat (which is an animal-based product), 12.1% of the participants, whose feeding habits changed, consumed fish meat, 23.92% poultry meat and 51.8% red meat. It is determined that participants consumed high rates of red meat and low rates of fish meat. In a study they conducted, Mandal et al. (42) reported that fish consumption in Dhaka, Bangladesh also fell significantl. They said that the reason for this may be the increases in the price of fish meat. For these reasons, fish meat consumption may have remained at low levels in our country. Regular consumption of
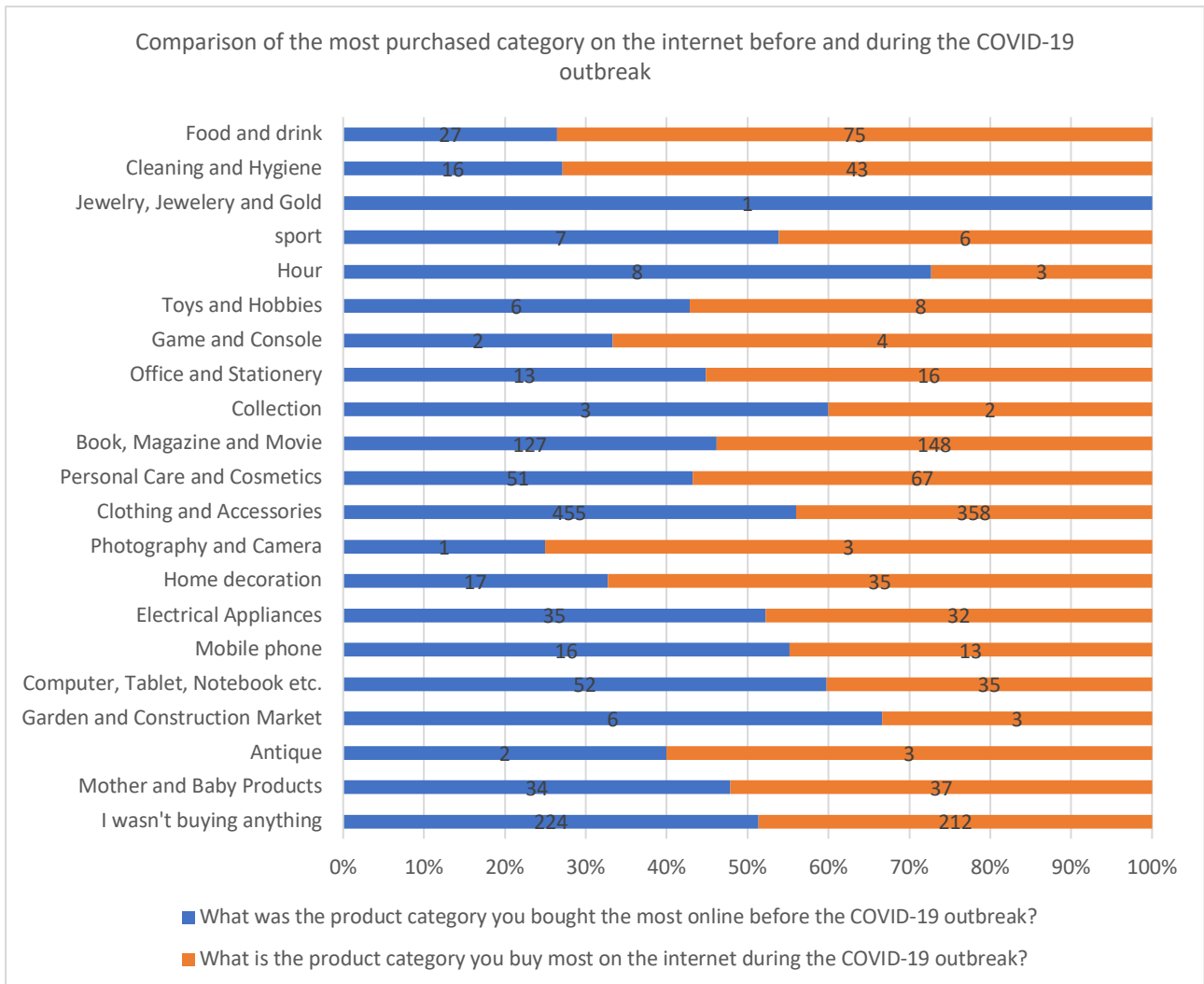
Figure 6. Comparison of the most purchased product category on the internet before and during the COVID-19 outbreak.

dairy products during the pandemic shall contribute positively to not being infected by the Virus and to the recovery of COVID-19 disease. Because dairy products are rich in vital nutrients such as proteins, fat, lactose, vitamins, minerals, enzymes, hormones and immunoglobulins; and, especially fermented dairy products contribute significantly to the immune system of individuals (43). According to the results of this study, in terms of dairy products, 0.8% of the participants prefer kumiss, 11% prefer kephir, 51.8% prefer ayran, and 84.6% prefer yoghurt.

As for eating habits, considering the relationship between being infected and not being infected by the COVID-19 virus; when compared with the participants, who mentioned that they were not infected by the COVID-19 virus, feeding habits of participants, who mentioned that they were infected by the Virus, changed more $(F_{(2, 880)}=5,915; p<,05)$. It was also found that changing feeding habits had no

effects on the outcome of drug treatments $(β=-,045; p>,05)$ (Table 2). This is because COVID-19 restrictions and measures that are taken to prevent and control the spread of the Disease caused changes in people's feeding habits; and, the understanding of a healthy diet is negatively affected. The consequences of unhealthy diet changes reported during short-term quarantine can lead to the development of unhealthy feeding habits in the medium to long term; and this, in turn, can negatively affect health in the long term (44). Failure to obtain a positive result from the treatment may be due to the formation of anorexia caused by drugs used during the disease, hence the failure to maintain a healthy diet (45). When we consider the relationship between changing feeding habits and the severity of the COVID-19 disease, it is found that changing feeding habits has a positive effect on the severity of suffering from the Disease $(β=,205; p<,05)$ (Table 2). We

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believe that the reason for this is that individuals change their unbalanced feeding habits dating back to the days before the pandemic and skip to healthy diets after taking into account the warnings of experts about healthy eating.

The Relationship Between Consumption Habits and COVID-19 Pandemic

Looking at a comparison of the shopping places, in which participants bought the most food products in general before and during the COVID-19 outbreak, the most noticeable difference is the decline in purchases made from supermarkets (Figure 4). The reason for this decline might be due to the tendency of individuals to purchase things from close-distance markets/groceries or online platforms. In a study conducted by Hassen et al (2020) in Qatar on the impact of COVID-19 on food behaviour and consumption, 35.35% of Responder stated that they ordered more food from the internet during the outbreak (13).

As can be seen from these data, the COVID-19 Pandemic affected many areas of everyday life, as well as the behaviour of consumers to buy their food. Some of the causes of this resulting picture can be listed as: (1) With the closure of restaurants and cafes, individuals are tending to grocery stores for food purchases (46). (2) In addition, because physical shopping in a grocery store is risky and causes individuals to fear being close to other consumers, consumers' purchasing patterns are rapidly shifting to online shopping. (3) On the other hand, the frequency of shopping trips has changed and no specific places for traditional shopping are found (47). (4) The change in consumer behaviour is partly due to a sense of fear from the Virus (48). As well as these reasons, because shopping has been pushed into online channels due to the closure of stores and sensitivity to social distance rules, e-shopping for food seems likely to continue to become attractive to individuals (47). When we look at when the behaviour of shopping on the internet began, it seems that 20.4% of participants (225 people) did not make any purchases on the internet even before and during the Pandemic. In a study conducted by Hassen et al (2020), 29.14% of respondents stated that they never shopped online(13). In this regard, it is similar to the results of our study

In Figure 5, the percentage of internet shoppers during the Pandemic is shown to be 10.6% (117 people). On the other hand, the percentage of those,

who stated that they also shopped before the Pandemic, is 69% (761). The percentage of online shoppers was 34.1% in 2019 and increased up to 36.5% in 2020 (49). The results of this report and the results of our study are similar in terms of the determined increase (in the above-mentioned percentage values). Online shopping has become one of the irreplaceable elements of daily life. Of course, some reasons trigger this situation. For example: (1) especially in large cities, individuals do not find enough time to shop; (2) in their cities, individuals cannot find the desired product at the desired price (3); or, individuals want to compare prices between different products; (4) the recent pandemic of COVID-19, which has had a large impact on a global scale, has made online shopping a frequently preferred place (50).

In Figure 6, the most purchased product category before the pandemic was Clothing and Accessories with 41.3% of internet purchases, followed by books, magazines, and movies with 11.5%. According to the Turkish Standards Institute's data in 2019, 67.2% of people, who shop over the internet, have purchased clothing and sports equipment. This category was followed by Other Activities Related to Travelling by 31,7% (travel tickets, car rental, etc.), Foods and Daily Needs by 27,4%, Household Goods by 26,9% (excluding consumer electronics), Electronic Media by 20,3% and Books, Magazines, Newspapers by 20,2% (including e-books) (50). According to the "Digital 2020: Global Digital Overview" Report released by the We Are Social and Hootsuite: looking at the e-commerce activities of users aged 16-64 years in the last 1 month (January 2020), based on Product Categories, it can be seen that individuals conducted online shopping mostly in the categories of Travelling, Electronic Devices, Beauty/Fashion in the last 1 month period in Turkey(50). It is also reported that the word "Shoes" is the most searched word for online shopping purposes. In addition, according to the Online Shopping Report published by Iyzico (one of the leading virtual payment systems in Turkey) on 20th January 2020 based on the data from the year 2019: it was found that, when compared to 2019, electronic expenditures increased by 35%. In 2019, the categories that were allocated less budget than the previous year were Home Decoration and Cosmetics (51).

According to the Report released by Iyzico based on the data from the year 2020, there was an increase in the trend of e-commerce in some sectors due to the

social distance rule, which stood out as a necessity after the occurrence of the Pandemic in 2020. Book Stores (213%) and Hobby and Toy Stores (8%) were the sectors with the most increase in transaction volumes; Camp Equipments (305%) and Book Stores (267%) were the sectors with the most increase in transaction volume (52). These data obtained from Iyzico 2020 Report and the data obtained at the end of our study match in terms of the increase of sales in the above-mentioned categories.

As can be seen in Figure 6, the least purchased product categories during this period were respectively jewellery, ornaments, gold, photos and cameras, games and consoles, and antiques. During the pandemic period, clothing, and accessories with 32.5% and books, magazines and movies with 13.4% were in the first place; however, it is seen that the highest increase is in the food and beverage category and the cleaning and hygiene category.

CONCLUSION

All these results indicate that the COVID-19 pandemic disrupted many known memories for other pandemics and led to unique new situations. It has been already known in other pandemics caused by viral infections that especially regular sleep, sunbathing, exercise, prebiotic/probiotic and mineral use have positive effects, and thus, patients have been encouraged to comply with these in order not to get sick and to overcome the disease mildly. In this pandemic, when both our results and other results reported in the literature are evaluated, it seems that many of these recommendations did not work. According to the results of the studies, there were serious changes in the nutritional behaviours of people during the pandemic. It has been observed that this change has both positive and negative consequences. Because it was observed that some participants changed their regular eating behaviours due to restriction and quarantine and turned to unhealthy nutrition, and some participants turned to healthy nutrition to get rid of the disease by strengthening their immune system. In addition, there has been also a change in the consumption of animal foods due to the fear that the disease will be transmitted from animal foods.

Considering the results of the relationship between the COVID-19 pandemic and consumption behaviours, it has been seen that there are serious changes. When the channels through which people buy their food products the most are compared, the most striking difference is the decrease in purchases made from supermarkets. It has also been observed that there is an increase in online shopping. The most purchased product category in online shopping was clothing and accessories with 41.3%. The largest increase in Internet shopping was observed in the food and beverage category and the cleaning and hygiene category

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