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Impact of Covid-19 pandemic on eating habits of the Turkish population

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Abstract

Aim: This study was planned in order to reveal how the quarantine process applied in Turkey due to the pandemic has affected the eating habits of our society.
Material and Methods: This is a cross-sectional comparative survey study. The study was carried out using the Attitude Scale for Healthy Nutrition and socio-demographic data in the cities located in the west of Turkey: Eskisehir, Ankara, and Afyonkarahisar. The survey was applied twice to measure pre-quarantine and post-quarantine information, and completed by reaching 306 people via social media.
Results: The majority of the participants in the study were women. The educational and socio-economic levels of the participants were found to be high. The body mass index of the majority of the participants in the study was in the normal or healthy weight status before quarantine, while it shifted to the over-weight status after quarantine. The total score of the Attitude Scale for Healthy Nutrition and the knowledge level scores about nutrition were found to be higher than before quarantine.
Discussions: Although the knowledge level of the individuals participating in the study about nutrition increased, it was found that this was not implemented much in practice. Due to the quarantine, individuals began to gain weight. During the quarantine process, ready-to-eat food consumption has decreased significantly. We can say that even though the consumption of ready-to-eat food increased a little after quarantine, it did not return to the previous levels.

Keywords
COVID-19; Pandemic; Nutrition; Pandemic Nutrition; Pandemic; Physical Activity

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Introduction

Coronavirus infection is a viral disease that emerged in Wuhan, China in late 2019 [1]. Later, it quickly affected the whole world and was declared a global pandemic by the World Health Organization (WHO) [2]. The disease, named "COVID-19" by WHO, has infected 99,638,508 people worldwide so far and caused 2,141,568 deaths (available online: https://covid19.who.int/?gclid=CjwKCAiAu8SABhAxEiwAsodSZFelStWTgXz4J6kMEORsKSptmQRoPS-E0k97PjmCAhW7VmFtbGH71xoC2TcQAvD_BwE, Accessed 27.01.2021). The situation is not any different in our country. As of now, 2,435,247 people have been infected in our country due to the COVID-19 outbreak, and 25,210 people have died (available online: https://covid19.who.int/region/euro/country/tr, Accessed 27.01.2021). Due to the COVID-19 pandemic, the whole world has faced an unknown disease and has made an effort to take a series of measures to slow its spread. On the other hand, efforts and studies to develop a vaccine against COVID-19 have started all over the world. In order to prevent the spread of the virus, wearing a mask, frequently washing or disinfecting the hands, and maintaining the distance between individuals were among the first measures taken [3-5]. However, these measures were not enough to slow the spread of the virus. Immediately afterward, additional measures were taken and education was interrupted differently in each country, working conditions were transformed into home-office systems, and international flights were stopped [6]. When these measures did not bring enough success in the fight against the virus, more aggressive practices were initiated and different measures were taken, such as lockdown processes, curfews, and the virus-infected people not contacting anyone for 14 days [6,7]. While the measures taken against COVID-19 have reduced the spread of the virus to some extent, this has led to a number of different issues. Although COVID-19 caused great damage to the economies of the countries, many businesses were closed and many people lost their jobs [8]. People forced to stay in their homes became isolated from social life, and a great change of lifestyle emerged. People have done their food and beverage shopping as if there was a famine, and an inactive process was started. Along with the pandemic, the eating habits and lifestyles of societies have changed [9]. Every country, through the media and the press, emphasized that the measures should be followed and the immune resistance should be kept high in order to be protected from COVID-19 [10]. There is a strong relationship between diseases and nutrition [1,5,6]. Nutrition is as important as medical treatment in the prevention and treatment process of diseases [1,5,6,9,10]. People with chronic diseases had to be especially much more careful. In quarantine periods, people tend to eat healthier and in a way that strengthens immune resistance. However, an inactive life led them to gain weight rapidly [9,12]. This study was planned in order to reveal how the quarantine process applied in our country due to the pandemic affected the eating habits of our society.

Material and Methods

Study Design and Determination of the Participants

This study is a cross-sectional comparative survey study designed to determine the changing eating habits of society with the effect of the pandemic. Long-term quarantine in our country started in March 2020 and was partially ended in July 2020. However, the inability to prevent the spread of the virus and the arrival of a 2nd wave with a heavier picture led the quarantine to be returned with more severe sanctions. Currently, several vaccines for the virus have been developed, but partial restrictions are ongoing due to the issues with the management of access to the vaccine and the vaccination process in communities. The survey of the study was carried out after the first long quarantine period, by delivering it to the people involving friends and neighbors via Whatsapp and mail between 1 July 2020 and 1 September 2020. A total of 378 people participated in the study, however, 306 questionnaires were evaluated, after the questionnaires thought to be incomplete or inaccurate were removed. All the participants of the study are of Turkish descent. The regions reached by the study are the cities of Eskisehir, Ankara, and Afyonkarahisar and their environs in the west of Turkey. The study covers individuals aged 18 and above. The data of the study were obtained from survey questions that consist of two parts. The first part of the survey included questions on the presence of any disease, weight before and after quarantine, number of people at home during the quarantine periods, the physical activity level of the people before, during, and after the quarantine, the consumption status of ready-to-eat food of the people before, during and after the quarantine, and whether they made their bread during the quarantine periods as well as questions on sociodemographic data such as gender, age, height, education level. The participants' height and weight were used to calculate their Body Mass Index (BMI). BMI's were calculated with the use of the formula "weight (kg)/height (m)2. In the second part, the Attitude Scale for Healthy Nutrition (ASHN) consisting of 21 items was used to evaluate the nutritional knowledge and behaviors of the participants before and after quarantine. The ASHN was used twice to measure eating habits of the participants before and after the pandemic. Changing eating habits, physical changes, and physical activity levels of the individuals before and after the pandemic were compared.

ASHN is a scale developed in Turkish by Tekkurşun Demir and Cicioğlu in 2019 to measure attitudes towards healthy nutrition, and its validity and reliability study was conducted [13]. The ASHN has a structure consisting of 21 items and 4 factors. These factors are called Information on Nutrition (IN), Emotion for Nutrition (EN), Positive Nutrition (PN), and Malnutrition (MN). The scale consists of 10 positive (1. I know the benefits of a healthy diet, 2. I know which foods contain protein, 3. I know which foods contain carbohydrates, 4. I know which foods contain vitamins/minerals. 5. I know what healthy foods are, 12. I have main meals (breakfast, lunch, and dinner) regularly, 13. I drink at least 1.5 liters of water a day, 14. I consume at least 3 meals a week of vegetables, 15. I eat fruit regularly, 16. I eat protein-containing foods (meat, milk, eggs, etc.) every day.) and 11 negative items (6. I get happy when I consume foods with sugar (chocolate, cake, biscuit, etc.), 7. I enjoy eating fast food products (hamburgers, pizza, etc.), 8. I enjoy eating delicatessen products (salami, sausage, soudjouk, etc.), 9 I like to eat fried foods, 10. I don't like to eat fruit, 11. I get happy when I consume desserts with syrup (baklava, kunafah, etc.), 17.

I skip main meals, 18. I eat junk food (chips, chocolate, biscuits, etc.) every day, 19. I drink at least 1 glass of acidic/carbonated beverage every day, 20. I eat fast, 21. I usually have foods such as cake and biscuits for my main meal.). The ratings for the positive items in the scale are "Strongly Disagree", "Disagree", "Neither agree nor disagree", "Agree", and "Strongly Agree". On the scale, positive items were scored as 1. 2. 3. 4 and 5, and negative items as 5. 4. 3. 2 and 1. The lowest score on the scale is 21 and the highest score is 105. The participants are considered to have a very low level of attitude towards healthy eating with a score of 21 on the scale, low level with a score of 22-42, medium level with a score of 43-63, high level with a score of 64-84 and ideally high level with a score of 85-110. The IN score was obtained from the items 1., 2., 3., 4., 5. while EN score from 6., 7., 8., 9., 10., 11, PN score from 12., 13., 14., 15., 16., and MN score from 17., 18., 19., 20., 21.) [13].

The internal consistency coefficients of the scale were calculated as 0.90 for the IN factor, 0.84 for the EN factor, 0.75 for the PN factor, and 0.83 for the MN factor [13].

Ethical Consideration

The Clinical Research Ethics Committee of Afyonkarahisar Health Sciences University was consulted and the written statement, dated 05.06.2020 and numbered 2020/6, explaining that this study does not require an Ethics Committee approval since it is a survey study, was obtained.

Statistical Analysis

The data were entered and analyzed in SPSS 22 version for statistical analysis. The data were evaluated using descriptive statistics (mean, median, standard deviation, percentage distributions). When comparing the means between the groups, firstly, the suitability of normal distribution was evaluated using the Kolmogorov-Smirnov and Shapiro-Wilk tests. When comparing the mean of the two dependent groups, the t-test and the chi-square test were used when parametric conditions were met, and the Wilcoxon test was used in cases where parametric conditions were not met. When comparing the mean of two independent groups, the t-test was used when parametric conditions were met, and the Mann-Whitney U test was used in cases where parametric conditions were not met. One-Way Analysis of Variance and Mean ± Standard Deviation were used to compare multiple groups.

Results

The study was conducted with 306 participants, of which 241 were women, 65 were men. The mean age of the participants was 39.64 ± 10.04 years; 84.3% of the participants were university graduates. The income level of 45.1% of the participants was between 5000-10000 Turkish Lira per month. While 5.6% of the participants were alone during quarantine, 14% were with another 1 person, 38% with 2 people, 34.6% with 3 people, and 7.6% of them were with 4 or more people. While 81.7% of the participants did not have a chronic disease, 4.6% had diabetes, 3.6% respiratory disease, 1.6% blood pressure, 2.9% cardiovascular disease, and 5.6% had other diseases. While the mean BMI value of the participants before the quarantine was 24.83 ± 4.48 kg/m2, the mean BMI value after the quarantine was found to be 25.79 ± 4.48 kg/m2, and a statistically significant difference was found between them (p<0.001) (Table 1).

Table 1. Sociodemographic data

	n1	%
Gender		
Female	241	78.8
Male	65	21.2
Age (years)	39.64±10.04	
Mean±Std. Deviation (min-max)	(21.0-61.0)	
Education status		
Secondary school and below	17	5.6
High school and below	31	10.1
University graduate and above	258	84.3
Level of income		
5000 Turkish Lira (TL) and below	37	12.1
5000-10000 TL	138	45.1
10000 TL and above	131	42.8

[1] Number.

Table 2. Distribution of BMI and ASHN data

	Mean±Std. Deviation	Median (25% -75%)	p[1]
Weight before quarantine (kg)	69.85±16.62	64.50 (56.00-79.25)	<0.001
Weight after quarantine (kg)	72.46±16.71	68.50 (59.00-82.00)	
Pre-quarantine BMI	24.83±4.48	24.09 (21.05-27.81)	<0.001
Post-quarantine BMI	25.79±4.48	25.10 (23.05-30.06)	
Pre-quarantine ASHN	83.22±10.69	84.00 (77.00-89.00)	0.001
Post-quarantine ASHN	83.76±9.74	84.00 (79.00-90.25)	
Pre-quarantine IN	22.64±3.32	24.00 (21.00-25.00)	<0.001
Post-quarantine IN	23.13±3.02	25.00 (21.00-25.00)	
Pre-quarantine EN	19.98±5.18	19.00 (16.00-25.00)	0.227
Post-quarantine EN	19.85±5.17	20.00 (15.00-22.00)	
Pre-quarantine PN	19.22±3.80	19.00 (17.00-23.00)	0.436
Post-quarantine PN	19.33±3.30	19.00 (18.00-22.00)	
Pre-quarantine MN	21.39±3.82	23.00 (19.00-25.00)	0.791
Post-quarantine MN	21.45±3.46	22.00 (19.00-25.00)	

[1] Wilcoxon Signed Ranks Test. Median (25% -75%).

Table 3. Weekly consumption level of ready-to-eat nutrients

	Mean±Std. Deviation	Median (25% -75%)	p[1]	Multiple comparisons
Ready-to-eat food consumption before the quarantine	2.01±1.67	1.00 (1.00-3.00)	<0.001	1-2. 1-3. 2-3
Ready-to-eat food consumption during the quarantine	0.31±0.93	0.00 (0.00-0.00)		
Ready-to-eat food consumption after quarantine	0.73±0.92	0.00 (0.00-1.00)		

[1] Friedman Repeated Measures Analysis of Variance on Ranks. Median (25% -75%).

Looking at the individual BMI values of the participant before the quarantine, 4.6% of them had a BMI value equal to or less than 18.5, 50.3% of them had a BMI value between 18.5-25.0 and 45.1% of them had a BMI value equal to or more than 25. After the quarantine, 4.9% of them were found to have a BMI value equal to or less than 18.5, 44.4% with a value between 18.5-25.0, and 50.7% with a value equal to or more than 25. While the total score of the ASHN before the quarantine was 83.22 ± 10.69, it was 83.76 ± 9.74 after the quarantine, and there was a statistically significant difference between them

(p<0.001) (Table 2). Among the four factors of the scale, a statistically significant difference was found in the pre-quarantine and post-quarantine nutritional knowledge levels only in IN (p<0.001) (Table 2).

Participants were asked about their weekly ready-to-eat food (ordered from outside) consumption frequency before, during, and after quarantine and were found to be 2.01 ± 1.67, 0.31 ± 0.93, 0.73 ± 0.92/week, respectively. A statistically significant difference was found between these values (p<0.001) (Table 3). Multiple comparisons showing where the statistical difference comes from are shown in Table 3. Participants' exercise status before, during, and after quarantine (at least 3 days a week over 50 minutes of exercise, walking=150 minutes and more per week) was found to be 56.2%, 24.2%, 55.2%, respectively. Among the participants, 43.5% reported making their bread at home during the quarantine period.

Discussion

The results of our study show that the measures taken in response to the COVID-19 outbreak affect the eating habits of the society [14-17]. The majority of the participants in our study were women [11,15,17,18]. This situation has been interpreted as women are more interested in issues related to nutrition on social media. Besides, in Turkish society, mostly women are involved in cooking. The fact that they had a high level of education [11,15,17,18] and were in the middle age group, shows that they could use more social media and participate in the study. It has also shown that 92.4% of the participants spent the quarantine process with at most 4 people in the same house. The results are similar to other studies related to quarantine processes [15-19]. Most of the participants in our study were seen not to have a chronic disease.

Among all the measures taken due to the COVID-19 pandemic all over the world, the best protection was achieved with quarantine processes [8-10]. Quarantine processes have led to the emergence of different problems in society, as well as to a decrease in the spread of the virus [12-20]. Prolonged quarantine processes negatively affected the mental health of people and caused an increase in depression and body weight, and a decrease in physical activity in many societies [11,16,20,21]. Distance education and online working systems have played an important role in the emergence of a sedentary life in quarantine processes [14-21]. In our study, 56.2% of the participants before the quarantine stated that they performed regular physical activity, exercise, and sports, while this decreased to 24.2% during the quarantine process. With the easing of quarantine restrictions, the rate of performing sports has returned to similar numbers as before the quarantine. The results of our study are similar to the results in the literature [15-17]. Although there were so many exercise programs on social media during the pandemic process, these programs were understood not to attract enough attention of people due to low levels of morale and motivation in the societies [9-12]. The results of our study show how much the quarantine process leads to a sedentary lifestyle. Studies have emphasized that quarantine processes enforced due to the COVID-19 pandemic and the resulting sedentary life cause an increase in body weight [9-11,15-17]. As a matter of fact, in our study, the body weight of the participants increased after quarantine compared to before quarantine. In our study, while the mean BMI value of the participants before the quarantine was 24.83 ± 4.48 kg/m2, the mean BMI value after the quarantine was found to be 25.79 ± 4.48 kg/m2, and a statistically significant difference was found in terms of weight gain. Using the classification of WHO on BMI, while 45.1% of the participants, before the quarantine had a BMI value equal to or more than 25, i.e. overweight, this rate increased to 50.7% after quarantine. While the BMI of 50.3% of the participants before the quarantine was between 18.5-25.0, after quarantine, there was a negative movement towards a rate of 44.4%.

Another pandemic that threatens humanity in the world in terms of health is obesity. Unfortunately, the COVID-19 pandemic seems to have triggered the obesity pandemic. One of the most important ways of protection from viral diseases is the determination and application of correct nutritional rules that will keep immune resistance high [22-24]. In our study, the eating habits of the participants were found to change after the quarantine compared to pre-quarantine habits, and also, the knowledge of the participants on nutrition improved. However, the fact that the emotion for nutrition, positive nutrition, and malnutrition scores did not change before and after quarantine shows that the knowledge improvement on nutrition is not put into practice. While the results of our study show similarities with some literature information, they show differences with some others [9-10,15,16]. In a study conducted in Italy, those with low BMI were reported to lose weight due to decreased appetite, and those who were overweight gained weight due to increased appetite [9]. In a study conducted in Poland, it was stated that the appetite of obese people increased and negative eating behaviors were adopted [10].

Conclusion

The results of our study showed that pre-quarantine ready-to-eat food consumption decreased to almost non-existent levels during the quarantine process, while at the end of the quarantine it increased slightly again. The data obtained show that the consumption of ready-to-eat food has decreased. As a result of our study, the knowledge improvement on nutrition and the decrease in ready-to-eat food consumption is seen as a return to healthy nutrition in the long term. The fact that almost half of the participants were making their bread at home in the quarantine process supports this idea.

The results also revealed that the quarantine process applied due to the COVID-19 pandemic triggered weight gain. Data reveal that the consumption of ready-to-eat food decreased during the quarantine periods, and even though this habit was relatively relaxed to some extent, it continued permanently after the quarantine period. In our study, it was found that there was an increased level of knowledge about nutrition to eat healthily and protect against COVID-19.

The weight of the individuals participating in our study has increased even though the tendency to healthy eating has increased. This situation might be explained by the excessive amount of food consumption and/or the decrease in physical activity. It is extremely important to raise awareness of the communities about healthy nutrition, so that pandemics that may occur in the future will not trigger the obesity pandemic.

Limitations

This study, which is a cross-sectional comparative survey, was conducted at a time when the first full quarantine ended. In connection with the measures taken due to COVID-19, the study was carried out through social media. The weight and height measurements of the individuals participating in the study were recorded according to their self-report, and BMI values were calculated accordingly. This study may not reflect the general population as it was carried out in the region where the author has been living.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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