Research Report

COVID-19 pandemic: Changes in the emotions, body weights and nutrition habits of individuals during social intervention measures

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Abstract.

BACKGROUND: During the COVID-19 pandemic, the increase in the anxiety levels of individuals is associated with the increase in body weight.

OBJECTİVE: To evaluate the effects of changes in individuals' experiences and mood on eating habits and body weights in during social restrictions due to COVID-19.

METHODS: The study included 623 adults in Turkey. Demographic characteristics, anthropometric measurements, information about nutritional habits during the pandemic period were questioned via an online survey. The Beck Depression Inventory (BDI) was used to evaluate individuals' negative perspectives.

RESULTS: The rate of patients who experienced body weight changes during the pandemic period was 61.4% (40.2% experienced increase), the mean BDI value was found to be higher in individuals whose body weight increased/decreased compared to those who experienced no change in body weight ($p = 0.008$, $p = 0.02$, respectively). Variables that positively affected the BDI scores, which was performed in individuals with increased body weight, main meal numbers ($p < 0.03$), and change in dried fruit consumption ($p = 0.05$). The variables that negatively affected the BDI scores were body weight increase ($p = 0.05$) and changes in cheese consumption.

CONCLUSIONS: We found that the changes in the emotional state during COVID-19 had an effect on dietary habits and body weight. There is a need for more comprehensive randomized studies on the interaction between lifestyle changes during the social intervention period due to the COVID-19 epidemic, quality of life, emotional state and eating habits.

Keywords: COVID-19 pandemic, Beck Depression Inventory, nutrition habits, body weight

1. Introduction

The novel coronavirus (CoV) infection (2019-nCoV), which emerged in Wuhan, China at the end of 2019 and spread rapidly to other countries, was named by the World Health Organization (WHO) as COVID-19, which is the abbreviation of "Coronavirus Disease 2019" [1]. Due to the growing concerns about the rapid spread of the epidemic, a pandemic was declared by WHO on March 11, 2020 [2]. COVID-19 became an issue in Turkey

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starting on January 10, 2020 and the first meeting of the Scientific Advisory Board of the Turkish Ministry of Health was held on January 22, 2020, and the first COVID-19 case was seen in Turkey on March 11, 2020 following neighboring European countries and Iran [3]. Quarantine has been implemented in many countries in the world to prevent the spread of the epidemic and to use medical resources more effectively [4]. Many measures and social interventions to prevent the spread of COVID-19 pandemic have been implemented in Turkey since March 20, 2020, such as curfews for those who are under the age of 18 and those over 65, and closures of schools/educational institutions, restaurants, cafes/bars, shopping centers, sports halls, and hairdressers, and the prohibition of travel between provinces [3].

Due to changes in lifestyle during the social intervention period; the limited access to grocery shopping (and thus, reduction of access to fresh food, increased consumption of pre-processed, fatty, salty, sugary, junk food instead of vegetables, fruit, fish, and other fresh foods); closures of gyms (and thus, reduction in regular physical activity); and, decreased working hours because of the closure of workplaces, psychological and sensory responses to the COVID-19 epidemic may increase the risk of developing unhealthy eating habits [4]. During this period, stress caused by the pandemic may lead to changes in eating habits, and cause excessive eating behaviors and increased energy intake. It can lead to high-fat, carbohydrate, and protein consumption, and may cause individuals to be particularly inclined to consume convenience foods and foods high in sugar content [5, 6].

Negative emotions may cause 'emotional eating', which is known to lead to overeating. In order to avoid the negative feelings caused by self-isolation, people may be more likely to seek reward and satisfaction regardless of the physiological signals of satiety and hunger [4]. The desire to consume a particular food is defined as "craving for food", which is a multidimensional concept that includes emotional, behavioral, cognitive, and physiological processes. Serotonin production, known as the happiness hormone, increases with the craving for carbohydrate foods, and this is associated with a good mood. In a sense, the consumption of carbohydrate-rich foods can be thought of as self-medication in case of stress. The effect of carbohydrate foods in bad mood is proportional to the glycemic index of the food [4]. On the other hand, rafined carbohydrate sources and consumption of sugar can cause fluctuations in adrenaline levels, called 'stress hormone', and negatively affect the stress response [7].

During this compulsory social intervention period, it has been determined that individuals who are at risk of social isolation, have higher depressive symptoms, and have obesity are exposed to more severe psychological effects [8]. During the Covid-19 pandemic period, several studies on the psychological health of individuals were evaluated and it was found that individuals increasingly showed anxiety and stress disorders and depressive symptoms [9–11]. During this period, restricted social life and increased psychological stress, along with deteriorating dietary habits and lifestyle changes, may increase the risk of obesity by causing individuals to increase their body weight [12]. Obesity, beyond being a chronic inflammatory condition, has been reported that obesity is a chronic inflammatory state, and it generally increases the risk of severe complications of COVID-19, which may be more complicated in association with heart diseases, diabetes, and lung diseases [6].

The immune system, which is affected by nutrition as a key element, protects the body's integrity by protecting the body against environmental agents such as pathogenic microorganisms and chemicals. In order to protect its defense mechanisms, the organism needs adequate and balanced nutrition with a healthy eating habit and the appropriate intake of energy, vitamins, minerals, and water. Decreases in immunity in relation with malnutrition and protein deficiency have been reported [13]. Conversely, in case of obesity, which develops due to the habit of excessive amount of fat and energy intake, individuals have been reported to have less lymphocytes with less phagocytosis ability to fight infection [14].

In this study, it was aimed to evaluate the effects of changes in the experiences and moods on eating habits and body weights in a period when individuals are restricted by social intervention measures.

2. Materials and methods

This cross-sectional study was conducted with 19 age and older 623 adult individuals, who were not psychologically or chronically ill, volunteered to answer the online questionnaire and scale questions. Individuals whose

answers to the online questionnaire were inconsistent and who responded to the questionnaire more than once were not included in the study. The online survey was announced via e-mail and social media between July and August 2020, volunteers were sought, and in this survey, individuals were asked to evaluate before and during the pandemic period. The online questionnaire consists of three parts. First part has items about demographic information of the participants, such as age, gender, educational background, occupational information and income levels, status of living alone, status of diseases, and medications used. The second part includes the individuals' height (cm), body weight (kg), regular physical activity status (doing/not doing), and since height and weight changes could not be measured due to the pandemic, they were evaluated based on their own statements. For further analysis, the Body Mass Index (BMI) values of the patients were calculated with the formula: body weight (kg)/height (m)². According to the ranges set by WHO, BMI values were classified as: under $18.5\,\mathrm{kg/m^2}$ as underweight, $18.5–24.9\,\mathrm{kg/m^2}$ as normal, $25–29.9\,\mathrm{kg/m^2}$ as pre-obese, and over $30\,\mathrm{kg/m^2}$ as obese [15]. It also includes the nutritional information of individuals, the number of meals per day, the frequency of consumption of some foods and beverages, and the changes and amounts of these foods during the pandemic period. Since there is no online food consumption frequency questionnaire validated in Turkey to evaluate the food consumption of individuals, a 19-item food consumption frequency questionnaire developed by the researchers was used in this study. The food consumption frequency questionnaire was prepared based on the Turkish Dietary Guidelines to reflect the food consumption of individuals [16]. In the questionnaire form, 1 portion size information of the questioned foods was given in order to ensure the accuracy of the data regarding the change in food consumption amounts. The third part includes the Beck Depression Inventory (BDI) to question the participants' negative perspectives about the future before and during the pandemic. In this study, the BDI created by Beck et al. [17] was used. BDI measures vegetative, emotional, cognitive, and motivational symptoms seen in depression. The aim of the scale is not to diagnose depression, but to express the degree of depression in numbers (0–9 points = Minimal Depression, 10–16 points = Mild Depression, 17–29 points = Moderate Depression, 30 points and above = Severe Depression). Each item identifies a behavioral pattern specific to depression and the inventory includes 21 self-evaluation statements with four options (0–3). The score that can be obtained from the scale varies between 0 and 63 [18]. In the study, since the insufficiency of the number of people in depression degrees may affect the results of the analysis, the analyses were performed on three levels of depression: minimal depression, mild depression, and moderate/severe depression, combining the degrees of "moderate depression" and "severe depression".

Approval for this study was obtained from the Scientific Research Platform of the Ministry of Health with the decision number 2020-05-19T13_15_24. Ethics Committee Approval was obtained from the Ethics Committee of Toros University Scientific Research and Editorial Board (#34/35, 17/06/2020).

2.1. Statistical analysis

The data obtained in the study were evaluated with the SPSS 16.0 package program. In this study, sample size calculated with statistical power analysis using Cohen's large effect size. For the effect size, it was determined that 83.2% power value would be reached when 220 observations were studied with a medium effect ($d = 0.50$), 5% type 1 error. Finaly, we recruited 623 individuals in this study. Appropriate descriptive values are given for qualitative and quantitative variables. Qualitative variables are expressed as number (n) and percentage (%), and quantitative variables as mean and standard deviation ($X \pm SD$). The suitability of the variables to normal distribution was evaluated using the Kolmogorov-Smirnov test. The homogeneity of the variances of the groups was examined with the Levene test. Between two independent groups, a difference between two means test (Student's t-test or non-parametric test) was used for continuous variables, and the non-parametric Wilcoxon test was used for the dependent two groups and continuous variables. Non-parametric Kruskal-Wallis analysis was used in groups of three or more. The Chi-square (χ^2) test was used for proportions in independent groups and the McNemar chi-square (χ^2) test was used for dependent groups. A value of $p < 0.05$ was considered statistically significant. Logistic regression analysis test was used to evaluate the variables thought to affect the BDI values.

3. Results

In this study, the rate of patients who experienced a change in body weight during the pandemic period was 61.4%. The proportion of individuals with an increase in body weight was 40.2% ($n = 251$), the rate of individuals with a decrease in body weight was 21.2% ($n = 132$), and the rate of individuals with no change in body weight was 38.6% ($n = 240$). In our study, the median value of change in body weight was 2 kg (1–15 kg) according to the self-reports of the individuals. It was found that individuals whose body weight increased during the pandemic period had less physical activity than individuals whose body weight did not change ($p = 0.001$). As expected, these individuals consumed more bread, bakery products, nuts, dried fruit, oil, carbonated beverage, tea/coffee, and sugar ($p < 0.001$). Demographic characteristics of the individuals are shown in Table 1.

In our study, before the pandemic period, 65% ($n = 405$) of the individuals had minimal depression, 16.2% ($n = 101$) had mild depression, and 18.8% ($n = 117$) had moderate-severe depression according to the BDI classification. During the pandemic period, 64.5% ($n = 402$) of the individuals had minimal depression, 13.3% ($n = 83$) had mild depression, and 22.3% ($n = 138$) had moderate-severe depression. According to comparison of the participants regarding the pre- and during-pandemic BDI scores, it was observed that there was an increase in moderate and severe depression group during the pandemic compared to the pre-pandemic period ($p = 0.008$). Pre-pandemic BDI values showed negative correlation with age ($r = -0.092$, $p = 0.02$), but there was no correlation between BDI and age during the pandemic period.

It was found that the mean BDI values of the individuals participating in the study before the pandemic were lower in obese individuals than in underweight individuals ($p = 0.007$). On the other hand, BDI mean values of individuals during the pandemic period did not differ statistically according to the BMI classification. However, it was observed that the average BDI values of the individuals with normal body weight increased during the pandemic period compared to the pre-pandemic period ($p = 0.02$) (Table 2).

The relationship between BDI mean values and body weight change during the pandemic period is shown in Table 3. It was determined that those whose body weight increased and those whose body weight decreased in the pre-pandemic period had higher BDI mean values ($p = 0.001$, $p = 0.003$, respectively) compared to those whose body weight did not change. During the pandemic period, higher mean BDI values were observed in individuals whose body weight increased and those whose body weight decreased compared to those whose body weight did not change ($p = 0.008$, $p = 0.02$, respectively).

As a result of the logistic regression analysis performed by excluding individuals with decreased body weight from the analysis ($n = 491$), a significant regression model (F(14,72), 6.01, $p < 0.001$) was established in our study and 45% of the variance in the dependent variable (R^2 adjusted $= 0.45$) was found to be explained by the independent variables. Variables that positively affected the BDI scores during the pandemic period were the absence of a disease ($\beta = 0.30$, t(72) = 3.33, $p = 0.001$), the number of main meals ($\beta = 0.17$, t(72) = 1.95, $p < 0.03$), and the change in the amount of dried fruit consumption ($\beta = 0.21$, t(72) = 1.96 $p = 0.05$), and the variables that negatively affected the BDI scores were the increase in body weight ($\beta = -0.24$, t(72) = -2.54 $p = 0.01$) and the change in cheese consumption ($\beta = -0.29$, t(72) = -2.72, $p < 0.008$) (Table 4).

4. Discussion

This study was conducted to evaluate the relationship between emotional states and eating behavior during the pandemic period, and it was observed that the changes in the mood, which were observed via an online questionnaire, caused a change in eating habits and body weight. There are many factors that lead people to eating behaviors due to emotions, and also affect this behavior. These include obesity, body perception, media, religious and cultural beliefs, past experiences, socio-demographic characteristics, current emotional state, hormones, environment, genetics, and appetite [19]. The COVID-19 pandemic represents not only an important public health problem, but also a serious mental health problem. However, very little is known about

Table 1
Demographic characteristics

Variable	Value
Age, *(median, min-max), year*	31.00 (18–84)
Male/female, *(n,%)*	160/463 (25.7/74.3)
Educational Status, *(n,%)*	
Literate	1 (0.2)
Primary School	2 (0.3)
Secondary School	1 (0.2)
High School	54 (8.7)
University	400 (64.2)
Post-Graduate	165 (26.5)
Profession, *(n,%)*	
Unemployed	60 (9.6)
Civil servant	186 (29.9)
Student	157 (25.2)
Private Sector	220 (35.3)
Status of Having a Disease, *(n,%)*	
Yes	131 (21)
No	492 (79)
Living Alone, *(n,%)*	
Yes	68 (10.9)
No	555 (89.1)
Body Mass Index, *(n,%)*	
<18.5 kg/m²	32 (5.1)
18.5–24.99 kg/m²	386 (62)
25–29.9 kg/m²	148 (23.8)
≥30 kg/m²	57 (9.1)
Smoking before the Pandemic, *(n,%)*	
Yes	168 (27)
1–5 cigarettes	40 (6.4)
5–10 cigarettes	61 (9.8)
10–20 cigarettes	50 (8.0)
20 or over cigarettes	17 (2.7)
No	455 (73)
Regular Physical Activity before the Pandemic	
Active	409 (65.2)
Sedentary	214 (34.8)

the psychological effect caused by the restriction of social life caused by this epidemic [20]. In a study evaluating anxiety and depression in 6057 individuals in Argentina, based on a test conducted twice (at the onset of the pandemic and after two weeks), it was observed that depression increased and anxiety and emotions (positive-negative) levels decreased [20]. In a cross-sectional study conducted two weeks after the onset of the pandemic in China, it is shown that 40% of the individuals participating in the study have increased depressive symptoms, and it is emphasized that infectious diseases such as Covid-19 by increase their anxiety and stress levels and affect the psychological health of individuals more [21]. Similarly, in our study, it was observed that there was

Table 2
Evaluation of BDI mean values of patients according to BMI classification before and
during the pandemic

Variable	Pre-Pandemic BDI Mean Values ($\bar{X} \pm$ SD)	During-Pandemic BDI Mean Values ($\bar{X} \pm$ SD)
BMI, n		
Underweight (32)	$12.03 \pm 7.28^{a*}$	11.09 ± 7.46
Normal (386)	8.8 ± 10.63	$9.75 \pm 12.15^{b**}$
Pre-obese (148)	9.46 ± 10.79	10.93 ± 12.07
Obese (57)	$7.42 \pm 8.01^{c***}$	10.75 ± 14.48

BMI: Body Mass Index; BDI: Beck Depression Inventory. *a Wilcoxon signed ranks test* $*p < 0.05$, *b Mann-Whitney-U analysis* $***p < 0.001$, *c Kruskal-Wallis analysis*, $**p = 0.01$.

Table 3
Evaluation of the relationship between BDI score mean values and body weight change status

Variable	Pre-Pandemic BDI Mean Values ($\bar{X} \pm$ SD)	During-Pandemic BDI Mean Values ($\bar{X} \pm$ SD)
Change in body weight, n		
Lose weight (132)	$9.29 \pm 9.31**$	$10.11 \pm 10.93*$
Weight gain (251)	$10.57 \pm 11.60**$	$11.84 \pm 13.43**$
No change (240)	7.20 ± 9.14	8.52 ± 11.82

$*$Kruskal-Wallis analysis, $p < 0.01$, Mann-Whitney-U analysis $p < 0.05$, $**$Kruskal-Wallis analysis, $p < 0.01$, Mann-Whitney-U analysis $p < 0.005$.

an increase in the number of individuals classified in the moderate/severe depression group during the pandemic period according to the BDI classification. This result can be considered as an indicator of the negative effects that the Covid-19 pandemic and subsequent social restrictions may have on the psychological health of individuals.

Obesity is a common finding in hospitalized COVID-19 patients, and its prevalence varies between studies. Studies have reported that its obesity prevalence in COVID-19 patients is 10% in China, 41.7% and 47.5% in the USA, and 75.8% in France [22–25]. In a study conducted in 37,252 adults in France, several negative changes such as increase in body weight (35%; ± 1.8 kg average), decreased physical activity (53%), increased sedentary time (63%), and unhealthy eating habits were reported during the pandemic period [26]. In another study conducted in Greece, it was shown that individuals' sleep time and screen time increased and their physical activity levels decreased during the pandemic period, while 35% of individuals of study increased their body weight and this increase was associated with increased breakfast, salty snacks, total snacks and decreased physical activity [27]. It is known that people tend to consume delicious foods with high energy content, especially during periods of high anxiety and stress levels such as the COVID-19 pandemic [28]. The pandemic period has started to be counted as an obesogenic environment due to the negative effects on the physical activity levels as well as the negative effects on the eating habits [29]. Studies have shown that stress stimulates the consumption of delicious food in approximately 30% of the population [30, 31]. Traditional explanations for stress-related binge eating often focus on the deterrent aspects of stress and the hedonic sedative effects of eating palatable foods. In other words, increases in eating during stress are traditionally assumed to be an attempt to reduce stress by a hedonic attempt, i.e., some form of self-medication [30–32]. In a study conducted in Italy during the COVID-19 quarantine period, less exercise, self-reported boredom/loneliness, anxiety/depression, increased eating, snack consumption, and consuming unhealthy foods, cereals, and sweets were associated with significantly higher weight gain [33].

Table 4
Evaluation of the relationship between BDI scores and some variables during
the pandemic period using the regression analysis method

Variables	Regression Analysis (R^2 adjusted $= 0.45$, $p = 0.001**$)		
	Coeff.	*%95CI*	*p*
Gender, n	*0.16*	*–1.01 to 9.64*	0.11
Male (119)			
Female (372)			
Change in body weight, n	*–0.24*	*–10.98 to –1.33*	0.01*
Increase (251)			
No Change (240)			
Disease, n	*0.30*	*0.43 to 1.72*	0.001**
Yes (110)			
No (381)			
Occupation, n	*0.12*	*–0.77 to 3.76*	0.19
Unemployed (60)			
Civil Servant (186)			
Student (157)			
Private Sector (220)			
Change in physical activity, n	*–0.10*	*–5.15 to 0.37*	0.08
Decrease (358)			
No change (133)			
The number of cigarettes/day, n	*0.67*	*–1.66 to 3.46*	0.48
1–5 cigarettes (36)			
5–10 cigarettes (41)			
10–20 cigarettes (43)			
20 or over cigarettes (16)			
Change in alcohol consumption, n	*–0.05*	*–3.31 to 1.85*	0.57
Decrease (31)			
Increase (28)			
No change (93)			
Quit (10)			
Use of supplements, n	*0.15*	*–0.50 to 7.69*	0.08
Yes (76)			
No (375)			
Sometimes (40)			
Number of main meals, n	*0.17*	*–0.06 to 6.91*	0.05*
1 main meal (15)			
2 main meals (271)			
3 main meals (205)			
Tea/coffee consumption, n	*–0.19*	*–7.95 to –0.50*	0.08
Decrease (51)			
Increase (264)			
No change (172)			
No coffee/tea consumption (4)			

(*Continued*)

Table 4
(*Continued*)

Variables	Regression Analysis (R^2 adjusted = 0.45, $p = 0.001$**)		
	Coeff.	%95CI	p
Changein vegetable oil consumption,n	–0.11	–6.13 to 1.15	0.17
Decrease (85)			
Increase (170)			
No change (357)			
No vegetable oil consumption (11)			
Change in cheese consumption, n	–0.29	–3.98 to –0.61	0.008**
Increased 1–3 portions (216)			
No cheese consumption (27)			
No change (248)			
Change in legumes consumption, n	–0.10	–2.38 to 0.88	0.36
1–3 portions (205)			
No legumes consumption (25)			
No change (261)			
Change in dry fruit consumption, n	0.21	–0.02 to 3.25	0.05*
1–3 portions (166)			
No dry fruit consumption (68)			
No change (257)			

*$p < 0.05$, **$p < 0.01$.

In another study conducted with obese individuals in the USA, it was shown that during the pandemic period, 72.8% of obese individuals participating in the study had increased anxiety and 83.6% had depressive symptoms, the reason for this is shown as increased food stock with social restrictions, stressful eating, stress caused by difficulty in reaching weight loss goals, and decreased physical activity levels [34]. In addition to the effect of negatively affected eating habits and decreasing physical activity levels on increasing body weight during the COVID-19 pandemic period, the increase in body weight can lead to an increased risk of infection too, thus creating a vicious circle, so obesity and COVID-19 infection can be considered as two colliding public health pandemics [20] In our study, we found that during the pandemic period, those individuals in whom decrease in physical activity and changes in emotional state are effective in increasing body weight consumed more types of foods with high carbohydrate content such as bread, bakery products, carbonated beverages, sugar, dried fruits, and they consumed oil more. Furthermore, we found that individuals who experienced a change (increase or decrease) in body weight during the pandemic period had higher BDI values compared to those whose body weight did not change. The social intervention measures in Turkey due to COVID-19 means, on the one hand, the risks of inactivity and reduced exercises, and, on the other hand, it also means that having meals constantly and having more time for cooking. In order to break the vicious circle between obesity and COVID-19, individuals should give more importance to their nutrition during the COVID-19 pandemic, were be guided for the right food selection, and were provide exercise suggestions that can be done at home, such as walking in the house and climbing stairs, thus will reduce both body weight gain and psychological stress, and individuals will be more protected against the disease.

In addition to being a risk factor for inflammatory diseases, obesity is also associated with low self-esteem, psychosocial comorbidities, and poor quality of life [35]. It is also often associated with various psychiatric disorders, including major depression, anxiety disorders (social phobia and generalized anxiety disorder) [36,

37]. For overweight and obese individuals, the psychological stress experienced during the COVID-19 quarantine is considered the best indicator of body weight gain [38]. In studies on this subject, it has been found that the increase in stress during quarantine triggers night eating attacks and disrupts the general meal order, causing an increase in body weight of individuals [39–41]. In our study, it was found that one of the variables that positively affected BDI during the pandemic period, which supports the literature, was the number of regular main meals.

In our study, when individuals are evaluated according to their nutritional habits during the pandemic period, it is seen that the increase in the consumption of dried fruit affects BDE positively, and the increase in cheese consumption negatively affects the BDI. The mechanisms between psychological problems and food consumption are not fully known. Psychological problems, especially depression, fear, and anxiety, are the result of an interaction between genetic, hormonal, immunological, biochemical, and neurodegenerative factors [42]. There are a limited number of studies evaluating the association between fears and emotions experienced during the pandemic period and eating habits [43]. In this study, the positive relationship between the increase in dried fruit intake and the BDI scores during the pandemic period may indicate an increase in antioxidant capacity, caused by dried fruits, which are rich in vitamins-minerals and phenolic compounds. While some studies have shown that foods containing antioxidants affect depression positively by reducing tryptophan breakdown and increasing the source of tryptophan for serotonin synthesis in the brain [44, 45], another study conducted in Japan showed that there was no significant relationship between antioxidant minerals and depression [46]. In this study, it was found that the increase in the amount of cheese consumption negatively affected the BDI scores. We think that this result may be due to tyramine found in fermented foods, such as cheese and wine, and because tyrosine is a naturally occurring amine, which is the biological precursor of serotonin, dopamine, norepinephrine, and its deficiency is thought to play a role in depression [42, 44, 47]. Tyrosine has also been shown to work well in those with dopamine-dependent depression. A pilot study conducted in 12 patients in France concluded that administering 3200 mg/day tyrosine showed significant improvement in mood and sleep on the first day [48]. Kaya et al. [43] assessed fear and anxiety and changes in eating habits during the COVID-19 pandemic period and reported that there was a positive correlation of increased cheese consumption with the COVID-19 Fear Scale and Generalized Anxiety Disorder-7 test. However, it is thought that more comprehensive randomized studies should be conducted on the relationship between increased cheese and dried fruit consumption and depression in the pandemic period.

This study, apart from being a cross-sectional study, has important limitations. The most important of these is that the changes in body weight, height and body weight are within their own declaration. Another is that the comparison between the two periods cannot be clearly demonstrated because individuals are questioned in a way to remind individuals of the pre-pandemic period. The last one is the lack of a validated food consumption frequency questionnaire for the evaluation of food consumption of individuals in Turkey.

5. Conclusion

As a result, we determined that the negative changes in the mood of the individuals during the social intervention period due to the COVID-19 pandemic have an effect on the nutritional habits and body weights of the individuals. Considering the limitations of the study, there is a need for more comprehensive randomized studies on the interaction between life style changes during the social intervention period due to the COVID-19 epidemic, quality of life, emotional state and eating habits.

Acknowledgments

None.

Conflict of interest

The authors declare that there is no conflict of interest.

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