

# Examination of the eating behaviours and depression states of the university students who stay at home during the coronavirus pandemic in terms of different variables

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**Abstract.** *Study Objective:* This study aims to examine the eating behaviors and depression states of the university students who stay at home during the coronavirus pandemic in terms of different variables. *Methods:* The study group consists of 1064 participants in total (440 men and 624 women). In addition to the personal information form, The Dutch eating behavior questionnaire (DEBQ), and the CES-Depression scale (CES-D) were used in the study. The normality test of the data was checked with the Shapiro-Wilk Test. The Mann Whitney-U test was used to compare continuous data between two independent groups, and the Kruskal Wallis-H test was used to compare continuous data between more than two independent groups. In addition, Spearman Correlation Analysis was used to determine the relationship between dependent variables. *Results:* As a result, a significant difference was found in all variables including age, gender, self-isolation, regular physical activity at home during the Covid-19, and before the Covid-19 Outbreak. In addition, in the correlation between eating behaviour scale sub-dimension scores and depression scale scores, no significant relationship was found between depression and external eating. *Conclusion:* It can be said that nutrition and mental health are as important issues as viruses in the process of (covid-19) pandemic.

**Key words:** Covid-19, university students, eating behaviours, depression

## Introduction

The New Type of Coronavirus pandemic, which has shaken the world recently and has been described as a worldwide pandemic, causes death, and seriously threatens all humanity (1). As in the whole world, serious measures are taken in all areas in Turkey. As the number of people who contract the disease increases, the authorities increase the calls to 'Stay Home', and people take it seriously. In addition to all these precautions, they also try to eat healthily and keep themselves psychologically strong. Well, do our students eat healthy on corona days? Do they have mental problems? The whole world is having this problem and this is the first time we have faced it. Perhaps none of us has had such an experience before. But during this period, we have to stay at home. At this point, we must

be strong both physically and spiritually. In this context, nutrition and staying positive are of great importance. University students are in the first period after childhood and school-age that reach adulthood (2). Especially the first periods of university years coincide with the adolescent period (3). Wrong nutritional attitudes acquired during the university education period, which coincides with the adolescence stage when important changes take place, become even more important as they can negatively affect other stages of life if they proceed to the period after university education. Young people constitute almost one-quarter of the Turkish population. Based on the young population, nutrition is of great importance for the youth in this period to be healthy for the next generations (4). University years refer to a transition period in which the late stages of adolescence and the first period of

adulthood begin. In this period, young people leave the family atmosphere which they are accustomed to, their stress levels increase, and thus they become more open to external influences and begin to make their own free choices. Eating out habits, especially consumption of fast-food products outside the home, are increasing and malnutrition are being observed along with changes in students' eating attitudes and behaviours (5). The prevalence and frequency of eating disorders among young people and especially among women is a public health problem defined by the World Health Organization (WHO) as 'an important medical condition' that requires 'medical attention' (6,7). Eating disorders, including anorexia nervosa, bulimia nervosa, binge eating syndrome, and night eating syndrome, occur as a result of impaired eating attitude. It is stated that the majority of eating disorders occur before the age of 25 and the prevalence of eating disorders is high during university years (8,9). The incidence of eating disorders in Turkey has increased in the last 25 years and is generally defined as abnormal and harmful eating habits developed to maintain weight loss and lost body weight. The main features of eating disorders include physical appearance-related disorders such as self-perception of fat, uncontrollable emotional disturbances accompanied by eating much, fear of gaining weight and fatness, and excessive desire to lose weight (10). It is stated that eating behavior is the tendency of people's nutrition-related thoughts, knowledge, emotions, and behaviors. This behavior can be affected by physiological, social, geographical, demographic, cultural, and material conditions, as well as the perception of the person, their previous experience with nutrition, and their nutritional attitudes. It is known that emotions are important and effective in eating activity (11). The effect of emotional states on eating behaviors is one of the most important factors related to emotional eating (12,13). It is known that individuals eat foods they love to suppress their emotions and that emotional correction has two positive effects on eating behaviours (13). Emotional eating is expressed as one of the eating problems and is an eating disorder that indicates the tendency to overeat against negative emotions. Those who are in danger in terms of emotional eating behavior are obese, adolescents, and children, etc. Emotional eating can trigger emotional

states such as stress/anxiety, depression, modelling of mother and father, anger, anxiety, and joy (14). Nutritional behaviour begins to take shape with the cultural characteristics of the society in which the person lives, and it can turn into negative eating habits such as unconscious eating according to the living conditions, unbalanced eating, fast eating, or eating pass because of the shortage of time. These habits can lead to eating disorders revealing the need for a multidimensional approach that includes physical, spiritual, and social components (15,16). During the period of youth, it is common to experience social and mental problems as well as physical problems. Given that about 30% of Turkey's population is comprised of the 12-25 age groups, it is observed that socio-cultural changes and cultural conflict increase the prevalence of eating disorders and appear to affect a large audience. A large part of this audience consists of university students. It is known that eating disorders are highly prevalent in this group and especially among women (15,17). Many factors in life can create depression, anxiety, and stress. Disasters such as fire, flood, long-term or severe illness, incompatibility in the family, problems at work, economic problems, fear of being dismissed, and some traffic disruptions while driving in traffic are possible situations in daily life that can cause depression, anxiety, and stress (18). It is known that eating disorders and long-term mental and social problems such as depression, anxiety, substance abuse, and suicide are interrelated. Due to eating disorders, personal health costs for problems such as decreased quality of life, loss of reproductive ability, severe medical problems, and death are also high (15,19). Based on psychological theories, Van Strien et al. define three different eating behaviors: restricted eating, emotional eating, and external eating. According to the restricted eating theory, individuals restricting their food intake consciously suppress their feelings of hunger and reduce their food intake (20). However, when their auto-control abilities are weakened, these individuals can abandon their diets completely, and the probability of overeating increases compared to those who do not. The psychosomatic theory focuses on "emotional eating" behavior that results in eating in response to emotional arousal or stress. These individuals use eating as a method of dealing with negative emotions. The third

theory, the external eating theory, suggests that some people have an increased tendency to eat without feeling hungry by being affected by external food stimuli such as taste, smell, and appearance (21). In light of all this information this study aimed to examine the eating behaviors of university students who stay at home during the coronavirus (Covid-19) pandemic and their depression states in terms of different variables.

## Material Method

### *Study group*

University students constitute the population of the study. The sampling of the study consists of 1064 people, 440 men, and 624 women, who stay at home during the coronavirus pandemic (Covid-19), which was selected via the convenience sampling method. Also, the data was obtained through the google form. Convenience sampling is the inclusion of only easily accessible people who are planned to be selected for the sample (22). This study has been designed according to the descriptive method and relational screening model. The data were collected without making any changes to the existing characteristics of the subjects, and the opinions of the subjects about the existing situation were obtained.

### *Data collection*

In addition to the personal information form, the Dutch eating behavior questionnaire (DEBQ) and the CES-Depression Scale (CES-D) were used as data collection tools.

### *The dutch eating behaviour questionnaire (DEBQ)*

DEBQ was developed by Van Strein et al. (1986) The questionnaire consisting of 33 items includes 3 sub-dimensions that evaluate emotional eating behaviors (for example, do you eat dessert when you are unhappy?), external eating behaviors (if the smell of what you eat is very nice, would you eat more than you normally eat) and restricted eating behaviors (would you eat less than you want to eat to avoid getting fat?). The

first 1-10 items of the scale measure external eating behaviors, 11-23 items measure emotional behaviors, and 24-33 items measure restricted eating behaviors. In the scale answered with the 5-point Likert, "1 refers to Never", and "5 refers to Often". The 31<sup>st</sup> item in the scale was asked in reverse with the necessary corrections made before proceeding with the analysis.

The validity and reliability study of the scale in Turkey was conducted by Bozan et al. (23). The Cronbach alpha values for sub-dimensions range between 0.90 (external eating) and 0.97 (emotional eating). The internal consistency coefficient of the entire scale was found to be 0.94.

### *CES-Depression scale (CES-D)*

CES-Depression Scale (24) is a short self-report scale developed by the American National Institute of Mental Health for use in scientific studies to evaluate the depressive symptoms of the general population. It is a scale consisting of 20 items with a 4-point Likert-type answer option (0=Never-Rarely, 3=Most of the Time). A total score between 0 and 60 is obtained from the scale, and a high score indicates a high level of depression. The scale was adapted into Turkish by Tatar and Saltukoğlu (25). It was reported that the Cronbach Alfa internal consistency reliability coefficient was calculated as 0.84 in the original application and 0.88 in the retest application. In addition, it was stated that there was a 0.69 level relationship between the two applications (26).

### *Statistical analysis*

SPSS 22 program was used in the analysis of the data revealing whether there were differences in the mean scores between the eating behaviour scale and the depression scale and the variables. The normality test of the data was checked with the Shapiro-Wilk Test ( $p < 0,05$ ). The Mann Whitney-U test was used for comparing continuous data between two independent groups. The Kruskal Wallis-H test was used for comparing continuous data between more than two independent groups. Moreover, Pairwise Multiple Comparison Test was used to determine the source of the difference in comparing more than two groups. In

addition, Spearman correlation analysis was used to determine the relationship between dependent variables. Confidence interval was 95% (significance level 0.05  $p < 0.05$ ). In this study, the cronbach alpha correlation coefficient of the eating behaviour scale was 0.87 and the cronbach alpha correlation coefficient of the depression scale was 0.76.

## Results

Table 1 shows that external eating scores and emotional eating scores of participants differ significantly in favor of female ( $p < 0.05$ ). However, restricted eating scores do not differ significantly according to the gender variable ( $p > 0.05$ ). Depression scale scores of the participants differ significantly in favor of female according to the gender variable ( $p < 0.05$ ).

Table 2 shows that the scores of external eating of the participants differ in favor of 24 and over years of age, emotional eating in favor of 21-23 years of age, and restricted eating scores in favor of 18-20 years of age according to the age variable ( $p < 0.05$ ). In addition, it is seen that those with depression scores of 18-20 years of age have higher median than others ( $p < 0.05$ ).

Table 3 highlights that according to the self-isolation variable of the participants during the Covid-19, the external eating scores differ significantly in favor of those who say yes and the restricted eating scores differ in favor of those who say no ( $p < 0.05$ ). However,

**Table 1.** Comparing the eating behaviour scale sub-dimensions and the depression scale scores according to the gender

Variables	Gender	N	Median (Q <sub>1</sub> -Q <sub>3</sub> )	p
External Eating	Female	624	26,50 (21,00-31,00)	0,01*
	Male	440	25,00 (19,00-30,00)	
Emotional Eating	Female	624	32,50 (22,00-40,00)	0,01*
	Male	440	27,00 (19,00-36,00)	
Restricted Eating	Female	624	30,00 (25,00-34,00)	0,19
	Male	440	29,00 (25,00-34,00)	
Depression	Female	624	47,00 (42,00-54,00)	0,01*
	Male	440	45,00 (40,00-51,00)	

\* $p < .05$

emotional eating scores do not differ significantly according to self-isolation during the Covid-19 variable ( $p < 0.05$ ). It was observed that depression scores do not differ significantly according to self-isolation during the Covid-19 variable ( $p > 0.05$ ).

Table 4 shows that the external eating scores differ significantly in favor of those who do physical ac-

**Table 2.** Comparing eating behaviour scale sub-dimensions and depression scale scores according to the age

Variables	Age	N	Median (Q <sub>1</sub> -Q <sub>3</sub> )	p
External Eating	18-20	254	24,50 (17,00-31,00) <sup>b</sup>	0,01*
	21-23	567	26,00 (20,00-31,00) <sup>ab</sup>	
	24 and over	243	27,00 (22,00-31,00) <sup>a</sup>	
Emotional Eating	18-20	254	28,00 (21,00-38,00) <sup>ab</sup>	0,01*
	21-23	567	31,00 (21,00-40,00) <sup>a</sup>	
	24 and over	243	30,00 (18,00-37,00) <sup>b</sup>	
Restricted Eating	18-20	254	30,00 (25,00-34,00) <sup>a</sup>	0,01*
	21-23	567	29,00 (24,00-32,00) <sup>ab</sup>	
	24 and over	243	29,00 (23,00-33,00) <sup>b</sup>	
Depression	18-20	254	49,00 (42,00-55,00) <sup>a</sup>	0,01*
	21-23	567	46,00 (41,00-52,00) <sup>b</sup>	
	24 and over	243	45,00 (40,00-52,00) <sup>b</sup>	

\* $p < .05$ ; ab: Different letters represent the differences between the groups.

**Table 3.** Comparing eating behaviour scale sub-dimensions and depression scale scores according to the self-isolation during the Covid-19 Outbreak

Variables	Did you self-isolate?	N	Median (Q <sub>1</sub> -Q <sub>3</sub> )	p
External Eating	Yes	1007	26,00 (20,00-31,00)	0,01*
	No	57	23,00 (15,00-28,50)	
Emotional Eating	Yes	1007	30,00 (26,00-38,00)	0,54
	No	57	31,00 (18,00-45,00)	
Restricted Eating	Yes	1007	29,00 (25,00-34,00)	0,23
	No	57	32,00 (23,50-36,00)	
Depression	Yes	1007	46,00 (41,00-53,00)	0,10
	No	57	44,00 (39,50-49,50)	

\* $p < .05$

tivity and the restricted eating scores differ in favor of those who do not perform physical activity, according to the variable of regular physical activity before the Covid-19 process ( $p < 0.05$ ). However, there was no significant difference in emotional eating scores according to the variable of regular physical activity before the Covid-19 process ( $p > 0.05$ ). It was observed that depression scores do not differ significantly according to the variable of regular physical activity before the Covid-19 process ( $p > 0.05$ ).

Table 5 shows that the external eating scores differ significantly in favor of those who do an activity and

**Table 4.** Comparing eating behaviour scale sub-dimensions and depression scale scores according to the regular physical activity before the Covid-19

Variables	Doing Regular Physical Activity	N	Median (Q <sub>1</sub> -Q <sub>3</sub> )	p
External Eating	Yes	688	27,00 (21,25-31,00)	0,01*
	No	376	24,00 (17,00-30,00)	
Emotional Eating	Yes	688	31,00 (21,00-39,00)	0,89
	No	376	29,00 (20,00-39,00)	
Restricted Eating	Yes	688	29,00 (24,00-33,00)	0,01*
	No	376	31,00 (26,00-36,00)	
Depression	Yes	688	47,00 (41,00-53,00)	0,05*
	No	376	45,00 (40,00-53,00)	

\* $p < .05$

**Table 5.** Comparing eating behaviour scale sub-dimensions and depression scale scores according to the regular physical activity at home during the Covid-19

Variables	Doing Regular Physical Activity	N	Median (Q <sub>1</sub> -Q <sub>3</sub> )	P
External Eating	Yes	556	28,00 (23,00-33,00)	0,01*
	No	508	24,00 (17,00-29,00)	
Emotional Eating	Yes	556	31,00 (21,00-38,00)	0,22
	No	508	30,00 (21,00-39,00)	
Restricted Eating	Yes	556	29,00 (24,00-33,00)	0,01*
	No	508	30,00 (26,00-35,00)	
Depression	Yes	556	47,00 (42,00-53,00)	0,21
	No	508	46,00 (40,00-53,00)	

\* $p < .05$

the restricted eating scores differ in favor of those who do not according to the variable of regular physical activity at home during the Covid-19 process ( $p < 0.05$ ). However, it is seen that emotional eating scores do not differ significantly according to the variable of regular physical activity at home during the Covid-19 process ( $p > 0.05$ ). Depression scores also do not differ significantly according to the variable of regular physical activity at home during the Covid-19 process ( $p > 0.05$ ).

Table 6 shows that the emotional eating scores of the participants differ in favor of those who eat according to the variable of nutrition management during the Covid-19 process ( $p < 0.05$ ). However, it was found that the scores of external eating and restricted eating do not differ significantly according to the variable of nutrition management during the Covid-19 process ( $p > 0.05$ ). It was observed that there was no significant difference in depression scores according to the variable of nutrition management during the Covid-19 process ( $p > 0.05$ ).

Table 7 shows that the emotional eating scores of the participants differ significantly in favor of those with weight gain and the restricted eating scores differ in favor of those with weight gain according to the variable of change in body weight ( $p < 0.05$ ). However, it was seen that there were no significant differences in external eating scores according to the change in body weight during the Covid-19 process ( $p > 0.05$ ). Depression scores were also found to be significantly different in favor of those with a weight loss according to the variable of change in body weight during the Covid-19 process ( $p < 0.05$ ).

In the correlation between eating behaviour scale sub-dimension scores and depression scale scores shown in Table 8, no significant correlation was found between depression and external eating ( $p > 0.05$ ). There is a low-level positive correlation between depression and emotional eating ( $r = 0,250$ ;  $p < 0,05$ ). There is also a low positive correlation between depression and restricted eating ( $r = 0,184$ ;  $p < 0,05$ ).

## Discussion and Conclusion

This study has been designed to examine the eating behaviors and depression states of the university students who stay at home during the Coronavirus (Covid-19) pandemic that has affected all humanity.

**Table 6.** Comparing eating behaviour scale sub-dimensions and depression scale scores according to nutrition management during the Covid-19

Variables	Nutrition	N	Mean Rank	Median (Q <sub>1</sub> -Q <sub>3</sub> )	p
External Eating	Home	1000	531,34	26,00 (20,00-31,00)	0,63
	Out	64	550,60	27,00 (23,00-30,00)	
Emotional Eating	Home	1000	521,07	30,00 (20,00-38,00)	0,01*
	Out	64	711,06	37,00 (30,25-41,00)	
Restricted Eating	Home	1000	528,51	29,00 (25,00-34,00)	0,09
	Out	64	594,86	30,00 (27,00-35,00)	
Depression	Home	1000	527,91	46,00 (41,00-53,00)	0,05
	Out	64	604,20	49,00 (42,00-54,75)	

\*p &lt; .05

**Table 7.** Comparing eating attitude scale sub-dimensions and depression scale scores according to the change in body weight during the Covid-19

Variables	Body Weight	N	Median (Q <sub>1</sub> -Q <sub>3</sub> )	p
External Eating	Gain	557	26,00 (22,00-31,00)	0,05
	Loss	157	27,00 (21,00-31,50)	
	No Change	350	24,00 (17,00-30,00)	
Emotional Eating	Gain	557	33,00 (24,00-40,00) <sup>a</sup>	0,01*
	Loss	157	32,00 (21,50-40,00) <sup>a</sup>	
	No Change	350	25,00 (16,75-34,00) <sup>b</sup>	
Restricted Eating	Gain	557	30,00 (26,00-34,00) <sup>a</sup>	0,01*
	Loss	157	29,00 (25,00-33,00) <sup>ab</sup>	
	No Change	350	28,50 (23,75-34,00) <sup>b</sup>	
Depression	Gain	557	48,00 (42,00-53,00) <sup>a</sup>	0,01*
	Loss	157	48,00 (42,00-54,00) <sup>a</sup>	
	No Change	350	44,00 (38,00-50,00) <sup>b</sup>	

\*p &lt; .05: ab: Different letters represent the differences between the groups.

Emotional eating behaviour is a tendency to eat that manifests in response to some emotional states and closely related to situations such as anxiety, depression, and problems in social relationships (28). Individuals with restricted eating behaviors are constantly trying to restrict their eating behavior to control their weight due to the anxiety they feel with the thought they eat a lot. However, individuals without restricted eating behavior do not worry about the consequences of eating behaviour (29). The most important difference that distinguishes the external eating theory from the psychosomatic theory is that the eating event is the reason for restarting. Eating perception of individuals who have an external eating attitude occurs when they are only in the same environment with food. Because they are affected by the features of the food such as its smell or appearance, they eat too much, and in other cases, they do not have a food-oriented perception (30). The population that suffers most from problematic eating attitudes and eating disorders is the women especially in adolescence and young adulthood and in addition, these disorders are known to be chronic and recurrent (31). Furthermore,

**Table 8.** Correlation analysis results between eating behaviour scale sub-dimensions and depression scale scores

		Depression (X)	External Eating (Y1)	Emotional Eating (Y2)	Restricted Eating (Y3)
Depression (X)	r	1	0,033	0,250	0,184
	p		0,284	0,001 <sup>**</sup>	0,001 <sup>**</sup>

problematic eating patterns have effects not only in the group with clinical disorder level eating behaviour but also in the general population. As an example, Neumark-Sztainer et al. (32) reported longitudinal eating behaviors with adolescents in 61% of women and 28% of men. Studies have shown that women are more sensitive to these conditions than men, and accordingly, the prevalence of depression in women is higher than men (33,34). It is known that approximately 95% of eating disorder cases are of women and dissatisfaction with the body and restricted eating attitudes are much more common in women than in men (35,36). The data obtained from our study coincide with the literature information. In our study, external eating scores and emotional eating scores in women differ significantly in favor of women compared to men, and Depression scale scores of participants differ significantly in favor of women according to the gender (Table 2). Depression can be the cause or result of social, psychological, and biological factors such as age and gender (37,38). In another study regarding female university students (n: 377) with similar characteristics to our study, cognitive and behavioural components of eating were questioned, and it was found that 73% of students had anxiety, 44.8% were sad, 45.1% were alone, 43.6% were happy and 27.4% were tired, 14.6% were angry respectively when they were eating in response. As a result, the vast majority of female students with normal weight stated that they had more eating attacks in response to emotional states such as anxiety (39,40). The data of this study are similar to our study. In a study the eating attitudes of individuals between the ages of 18-24 were examined and it was determined that 7.1% in the 18-19 age group of individuals are at risk for eating disorders; 10.9% in the 20-21 age group; 17.6% in the 22-24 age group. Considering this study, the scores of external eating of the participants differ in favor of 24 and over, emotional eating scores in favor of 21-23 years, and restricted eating scores in favor of 18-20 years according to the age variable. The reason for the change between age groups shows that many factors (socio-economic, cultural, educational field, etc.) play a role in the aetiology of the disorders among groups; therefore it is not known which age group is riskier in eating disorders. Emo-

tional eating behavior is closely related to anxiety, depression, and problems in social relationships (28,41). In addition, in our study, it was seen that those with depression scores of 18-20 years have higher rank averages than others. Depression can be the cause or result of social, psychological, and biological factors such as age and gender. Considering the relationship between age and depression, studies report that the prevalence of depression decreases with increasing age (37,38). In another study, the issue of whether stress and emotional eating caused eating disorders in 345 young adults (mean age: 19.5 years), mostly composed of healthy women (n: 227) was investigated. Eating disorders were determined to be accompanied by stress and emotional eating, and it was reported that girls experience more stress mainly related to emotional eating (42). In another study, Czaja, Rief, and Hilbert (43) stated that loss of control is particularly difficult in children between 7-12 years of age who have binge eating or overeating behavior. The results of a study with undergraduate students showed that as the difficulty in defining emotion and understanding the emotional state increased and the access to emotion regulation strategies was restricted, binge eating increased (44). While expanding the scope of the measures taken to protect the Coronavirus pandemic, attention is paid to the issue of social isolation from state elders. One of the most critical measures to prevent the spread of coronavirus cases is to follow the social distance rule and to self-isolate outside of essential situations. In our study, according to the variables of self-isolation in the Covid-19 process of the participants, the external eating scores differ significantly in favor of those who said yes, and the restricted eating scores in favor of those who said no. However, emotional eating scores do not differ significantly according to the Covid-19 self-isolation variable. According to the results of the study, it can be thought that individuals who are isolated and who stay at home have increased their consumption and fondness for food smells and appearance. It was also observed that depression scores did not differ significantly according to the Covid-19 self-isolation variable. According to the results of our study, there is a situation in favor of those who self-isolate in their eating attitudes and behaviors, and this may be due to

the sense of trust arising from self-isolation. Again, negative consequences should not be expected in the depression of those who self-isolate. Again the reason for this may be that thought that the individual has secured him/herself. However, it has been proven by studies that after a while social isolation creates depression and stress. According to the World Health Organization, nutrition is food intake, which is considered to be related to the nutritional needs of the body. Good nutrition is the cornerstone of health with an adequate and balanced diet with regular physical activity. Adequate and balanced nutrition provides a healthy life, efficiency, vitality, and physical activity to combat human problems. In addition, the health and well-being of future generations is provided. Nutrition is accepted as a basic principle in developed countries. In our study, according to the variable of doing a regular physical activity before the Covid-19 process, it was seen that the external eating scores differ significantly in favor of those who do physical activity and the restricted eating scores differ in favor of those who do not perform physical activity. However, it was concluded that emotional eating scores do not differ significantly according to the variable of regular physical activity before the Covid-19 process. The main factors for healthy aging and minimizing health risks related to age are to increase healthy nutrition and physical activity. Daily regular physical activity is the most important element in the prevention of chronic diseases along with healthy nutrition (45). Again, according to the variable of performing regular physical activity before the Covid-19 process, it was observed that depression scores do not differ significantly. However, studies done have shown that physical activity reduces anxiety and depression and facilitates stress coping by improving positive thinking (46). The effect of physical activity and nutritional intake on health is often explored separately. Physical inactivity is one of the main causes of most chronic diseases (47, 48). Malnutrition is an important risk factor for non-communicable diseases such as cardiovascular diseases, diabetes, and some types of cancer (47, 49). Table 6 of this study shows that the external eating scores differ significantly in favor of those who do the activity and the restricted eating scores differ in favor of those who do not according to the variable of regular physical activity at home dur-

ing the Covid-19 process. Many studies have shown that nutrition and physical activity are among the most important effects in terms of human health. In the study of Cavadini et al. (50), it was stated that 60-80% of them consumed the morning snacks and 80-90% of the afternoon consumed snacks in the adolescent period, that adolescents doing physical activities are more healthy, that the frequency of consumption of cereals, fruit, juices, and salads was higher so that individuals doing physical activity during the adolescent period had higher micronutrient consumption than non-sports individuals. Depression scores do not differ significantly during the Covid-19 process according to the variable of regular physical activity at home. The reason for getting these results from the study is that the pandemic is very new, frightening and unknown, and people cannot show enough interest in physical activity in such a period due to different flurries. But it should be known that participating in regular physical activity is good for human health physically, physiologically, and psychologically. In a systematic review by Mammen and Faulkner (51), it was emphasized that increasing physical activity is a valuable strategy in improving mental health and reducing the risk of developing depression. It is known that many discourses have emerged about how nutrition will be during the COVID-19 pandemic. Many clues such as strong immunity, regular, balanced diet, vitamin D supplements, abundant fluid intake, etc. are given and people are confused along with a very rapid change. Although this situation changes people's eating habits, it is thought to create some uneasiness. According to a result obtained from our study, the emotional eating scores of the participants differ in favor of those who eat out according to the variable of how nutrition was managed during the Covid-19 process. It may be thought that this situation may be due to the uneasiness of those who have to eat out in such a period. Emotional eating is defined as the use of nutrients to avoid negative emotions. Among the negative situations that reveal emotional hunger are many factors such as sadness, frustration, anger, daily troubles, discouragement, ego threats, depression, and stress. To eliminate these situations, there is a tendency toward emotional eating behavior. Another important factor is the overeating behavior of the individual as a result of

the difficulties in expressing and perceiving his feelings (52). Therefore, considering these situations and results, it is thought that they will guide and shed light on new studies. It has been determined that stress and other emotions affect body weight and food intake. In some emotional situations, obese people are predicted to eat more than individuals of normal weight. It seems that eating like this has the effect of reducing negative emotions, especially loneliness, boredom, anger, and depression (39). According to the results obtained from our study, the emotional eating scores differ significantly in favor of those who gain weight and the restricted eating scores differ in favor of those who gain weight according to the variable of body weight change in the Covid-19 process of the participants. The abovementioned information that supports our study reveals that eating reduces the psychological states. In our study, it is thought that obtaining results in favor of those who gain weight in their eating sub-dimensions is indicative of the deterioration of their eating attitude behaviors in those who experience the pandemic and those who gain weight. Insomnia, loss of weight, anorexia, and fatigue can sometimes be early somatic signs of depression (53). In our study, it was observed that depression scores differ significantly in favor of those with weight loss according to the variable of body weight change in the Covid-19 process. Literature studies explain that depression is affected by many different factors. Irregular weight gains may be the cause of depression, and it has been determined by studies that individuals with depression have weight loss. Although a regular loss in weight is known to be healthy by humans, if it is in the same group as in our study with irregular weight loss and accompanying irregular eating attitudes and behaviors, even insomnia, anorexia, etc., it is necessary to investigate whether there are symptoms of physical or psychological diseases. In the relationship between eating attitude scale sub-scale scores and depression scale scores, no significant relationship was found between depression and external eating. There is a low-level positive relationship between depression and emotional eating ( $r = .250$ ). There is also a low positive correlation between depression and restricted eating ( $r = .184$ ). It is known that depressive symptoms are often associated with obesity and emotional eating plays an important

role in weight gain (39, 54). In a study, the relationship between a sample of 298 fathers and 294 mothers and three-factor eating behaviors (emotional eating, external eating, and restricted eating), depression, and body weight gain were examined. It was observed that there is a causal relationship between body weight gain, emotional eating, and depression in women, and depressive symptoms are highly associated with emotional eating (39,55). In a study with a total of 1453 students at a university in Mexico (mean age: 20.6 years, 664 girls and 789 boys), the relationship between BMI, depressive symptoms, and emotional eating was examined. As a result, it was found that BMI and depressive symptoms in both genders were associated with emotional eating ( $p < 0.05$ ) (39,54). The results obtained from these studies support our work in all aspects. Some psychological terms and definitions are also included in the definitions of emotional eating and restricted eating sub-dimensions. In our study, a low positive relationship was found. It has been reported that depression is a central feature of eating disorder, and it appears as exaggerated symptoms due to hunger and weight loss (15,56). Literature sources tell us that the fact that hunger and/or protein malnutrition and corticotrophin-releasing hormone increase or decrease serotonin function increases depressive symptoms in eating disorders (15,57).

As a result, external eating and emotional eating scores of university students are significantly different in favor of women according to the gender variable; external eating scores differ in favor of 24 and over, emotional eating scores differ in favor of 21-23 age group and restricted eating scores differ in favor of the 18-20 age group according to the age variable there are significant differences in favor of those who say yes, and the restricted eating scores in favor of those who say no according to the variable of self-isolation during the Covid-19 process. According to the variable of doing regular physical activity at home during the Covid-19 process, external eating scores differ in favor of those who do the activity and restricted eating points differ in favor of those who do not. Emotional eating scores differ significantly in favor of those who eat out according to the variable of how nutrition was managed during the Covid-19 process, emotional eating scores differ in favor of those who gain weight

and the restricted eating scores differ in favor of those with gains in weight according to the variable of body weight change during the Covid-19 process. Depression scale scores of university students were found to differ significantly in favor of women according to the gender variable, sum of the ranks of those who were 18-20 years old were higher than others, and differed significantly in favor of those who lost weight during the Covid-19 process. There was no significant relationship between depression and external eating. There was a low-level positive relationship between depression and emotional eating ( $r=0,250$ ). A low positive correlation was found between depressions and restricted eating. It can be said that nutrition and mental health are as important issues as viruses in the process of (covid-19) pandemic.

**Conflicts of interest:** The authors declare that there is no conflict of interest about this manuscript.

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