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Applied nutritional investigation

Are depression, resilience and fear of COVID-19 related to eating behavior and nutrition status of university students?

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ABSTRACT

Objectives: This study was designed to examine eating behaviors and their association with fear and depression states concerning COVID-19 among students in Turkey.

Methods: A total number of 499 students, 336 (67.3%) female and 163 (32.7%) male, participated in an online-based cross-sectional study. The survey collected data on the Dutch eating behavior questionnaire (DEBQ), along with measuring psychological effect by using the Fear of COVID-19 Scale, Beck Depression Inventory, and Brief Resilience Scale. In addition, 24-h dietary records were used to calculate the daily energy and macronutrient intakes in the study.

Results: A negative correlation between brief resilience and fear of COVID-19 was found. Total and subdomain DEBQ scores were positively correlated with fear of COVID-19; conversely, there was a negative correlation with brief resilience (P < 0.05). More than half (58.9%) of students had depression, and students who had moderate and severe depression had higher total DEBQ and emotional eating scores. Students with severe depression had the highest levels of fear of COVID-19. Students having higher daily energy intake had greater fear concerning COVID-19, and the daily energy intake was negatively correlated with restrained and external eating.

Conclusions: During the pandemic, negative psychological effects resulted in unfavorable dietary behavioral consequences, depending on the increasing levels of stress.

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Introduction

In December 2019, COVID-19 began in Wuhan, Hubei, China, and spread rapidly across the world, becoming a serious infection threat to public health in many countries. It was declared by the World Health Organization (WHO) as a global outbreak that required emergency intervention [1,2]. Public health authorities started to recommend wearing a mask, social distancing, and hygiene, and individuals were forced into numerous restrictions including whole and/or partial lockdowns by governments to minimize the risk of transmission [3]. Temporary closures, isolation practices, and restrictions have affected the physical and mental health of many individuals and have led to changes in habitual dietary and physical activity states [4–6]. Many psychological problems, including stress, anxiety, depression, insomnia, and frustration, emerged as important consequences of the COVID-19 outbreak, and studies highlighted college students as among the most strongly affected by the pandemic owing to uncertainty regarding academic success [7–9]. During the interrupted education process, students were introduced to digital learning and had to continue attending classes online to support governments’ “stay-at-home” mandates [10]. A longitudinal cohort study conducted in the UK reported the greatest increase in mental distress was among people ages 18–24 y owing to home confinement [11]. A study focusing on Chinese medical students reported that about 24.9% of the students experienced anxiety pertaining to the COVID-19 outbreak [12]. Among college students in the US, spending extensive time (8 or more hours) on screens was found as a risk factor for higher levels of psychological effect from the COVID-19 outbreak [13]. A study from Pakistan showed that 23% of health science students experienced moderate to severe depression, and about 44% of the sample experienced moderate to severe anxiety [14]. There have been reports that stress affects not only individuals’ mental well-being but also eating habits, eating behaviors, and food intake [15].
Some studies have shown that when individuals feel stressed, they tend to develop unhealthy dietary patterns and prefer the consumption of hyperpalatable, high-sugar and high-fat foods, whereas other studies have reported that food consumption decreases [16]. The current study was conducted to assess fear of COVID-19, depression, and resilience scores of students and how these influenced their eating behavior during the pandemic in a developing country, Turkey.

Methods

Participants

A web-based, cross-sectional survey was carried out among students ages 18–25 y studying at 92 different universities in Turkey between November and December 2021. An online questionnaire was developed via Google Forms, and a link to the questionnaire was sent to participants via social media (Facebook, Instagram, LinkedIn, Twitter, and WhatsApp) using the snowball sampling method. Exclusion criteria included use of drugs (antidepressants, metformin, etc.); having conditions affecting appetite, chronic or systemic diseases, or psychiatric diseases; receiving eating behavior therapy; and/or being pregnant or lactating. Students studying medicine or health sciences were also excluded. The Hacettepe University Non-interventional Clinical Researches Ethics Board approved the protocol (approval number: GO 21/538). Detailed information about the study was given to students who met the study criteria and agreed to participate. The necessary sample size was calculated as a minimum of 462 individuals, with 85% power and 5% significance. Sample-size calculation was done using the G’Power 3.1.9.2 package. Overall, 521 participants were reached during the study period, 22 of whom were excluded because of missing data and inconsistency with inclusion criteria. Therefore, 499 participants were included in the study.

Procedure

Data including sociodemographic variables and scores on the Dutch Eating Behaviour Questionnaire (DEBQ), the Fear of COVID-19 Scale (FCV-19S), the Beck Depression Inventory (BDI), and the Brief Resilience Scale (BRS) were collected on the Google Forms website. All surveys were conducted during the pandemic.

Measures

Dutch Eating Behaviour Questionnaire

The DEBQ is a 33-item measure designed to examine eating behaviors. The questionnaire was developed by van Strien et al. [17] and tested for its Turkish validity and reliability [18]. The participants rated all items on a five-level scale ranging from 1 (never) to 5 (very often). These included three subdimensions evaluating emotional eating, external eating, and restrained eating. A higher total subdimension score indicates a tendency for that eating behavior. “Emotional eating” represents a desire to eat to alleviate the effects of stress. “External eating” refers to responsiveness to environmental food cues. “Restrained eating” is related to the behavior of deliberately restricting consumption of food.

Fear of COVID-19 Scale

The FCV-19S consists of 7 items, scored from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater fear of the novel coronavirus. The scale was developed by Aborsu et al. [19] and adapted to the Turkish context by Satici et al. [20].

Beck Depression Inventory

The BDI is a self-administered instrument containing 21 multiple-choice questions. It is used for assessing the severity of depression. The inventory was developed by Beck et al. [21], and Turkish validity and reliability of the inventory was carried out by Hisli [22]. The response to each item is on a 4-point scale, with scoring from 0 to 3. The level of depression is classified as none/minimal, mild, moderate, or severe according to the total score.

Brief Resilience Scale

The BRS is a 4-item, self-reported scale measuring individuals’ ability to recover from stress; resilience is recognized as a protective factor for depression. The BRS was developed by Smith et al. [23], and a Turkish version of the scale was validated by Doğan [24]. Participants answered using a 5-level Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) for each item. Higher total scores indicate higher resilience.

Daily energy and nutrient intake

Twenty-four–hour dietary records were taken for two consecutive days consisting of a weekend and weekday. These records were analyzed with the Bebis Program to calculate the daily energy and macronutrient intakes of each participant.

Statistical analyses

Statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS), version 23.0. The normality of the data was evaluated by the Shapiro-Wilk Test. The BDI, FCV-19S, BRS, and DEBQ scores of females and males were compared with the t-test, whereas differences in depression levels were analyzed with the χ² test. Correlation between scale scores was determined with Pearson correlation. Scores of scales and daily energy and macronutrient intake according to body mass index (BMI) classifications and depression levels were statistically analyzed with analysis of variance, and the Tukey test was applied to determine significant differences between the groups with more than two categories. A P value <0.05 was considered statistically significant.

Results

Demographic and anthropometric characteristics

The study group consisted of 499 university students in total (336 females and 163 males). Demographic characteristics and anthropometric measurements of the students are given in Table 1. The mean BMI of females and males was 21.8 ± 3.3 kg/m² and 24.6 ± 3.4 kg/m², respectively. A total of 12.5% of females and 9.2% of males were underweight, whereas 68.8% of females and 49.1% of males were normal weight, according to the BMI classifications. The frequency of overweight and obesity was 11% and 7.7%, respectively, in females and 35.6% and 6.1%, respectively, in males.

Eating habits and dietary intake

Table 2 displays eating habits and dietary intake of the students during the COVID-19 pandemic. More than half of the students declared increased consumption of food (57.4%) and more frequent snack consumption (69.5%) during the pandemic. On the other hand, 51.9% of the students had decreased fast-food consumption.

Table 1

| Age, y      | Female (n = 336) | Male (n = 163) | Total (N = 499) |
|-------------|------------------|----------------|-----------------|
| 22 ± 2.8    | 22.4 ± 2.5       | 22.1 ± 2.7     |
| Marital status |                  |                |                 |
| Married      | 12 (3.6%)        | 7 (4.3%)       | 19 (3.8%)       |
| Single       | 324 (96.4%)      | 156 (95.7%)    | 480 (96.2%)     |
| Mother’s education |            |                |                 |
| ≤ High school | 263 (71.9%)      | 126 (77.3%)    | 389 (77.9%)     |
| ≥ High school | 73 (28.1%)       | 37 (22.7%)     | 110 (22.1%)     |
| Father’s education |        |                |                 |
| ≤ High school | 215 (64%)        | 106 (65%)      | 318 (63.7%)     |
| ≥ High school | 121 (36%)        | 60 (35%)       | 181 (36.3%)     |
| Household size |                |                |                 |
| One to four persons | 183 (54.5%)      | 104 (63.8%)    | 287 (57.5%)     |
| Five or more persons | 153 (45.6%)      | 59 (36.2%)     | 212 (42.5%)     |
| Residency    |                  |                |                 |
| Living with family members | 252 (75%)      | 108 (66.3%)    | 360 (72.2%)     |
| Living with friends | 29 (8.6%)        | 22 (13.5%)     | 51 (10.2%)      |
| Living alone  | 10 (2.9%)        | 29 (17.8%)     | 39 (7.8%)       |
| Living in a dormitory | 45 (13.5%)      | 4 (2.4%)       | 49 (9.8%)       |
| Anthropometric measurements | |                |                 |
| Height, cm   | 164.8 ± 5.8      | 179.6 ± 6.3    | 169.6 ± 6.2     |
| Weight, kg   | 59.3 ± 9.8       | 79.7 ± 13      | 65.9 ± 14.5     |
| BMI, kg/m²   | 21.8 ± 3.3       | 24.6 ± 3.4     | 22.8 ± 3.6      |
| Underweight  | 42 (12.5%)       | 15 (9.2%)      | 57 (12.7%)      |
| Normal weight | 231 (68.8%)      | 80 (49.1%)     | 311 (66.3%)     |
| Overweight   | 37 (11%)         | 58 (35.6%)     | 95 (19%)        |
| Obese        | 26 (7.7%)        | 10 (6.1%)      | 36 (7.2%)       |

BMI, body mass index.
Daily protein, carbohydrate, and fat intakes were 55.2±437.7 kcal/d among females and 1921.6±667 kcal/d among males. Regarding dietary records, energy intake was 1515.6±552.1 kcal/d among females and 2861.8±552.1 kcal/d among males. Breakfast consumption was noted to occur every day, and 25.5% reported consuming it almost every day. Students stated they consumed 2 to 3 meals a day (77.6%) and 2 to 3 snacks a day (68.6%). The pandemic caused an increase in food preparation and cooking practices at home for both females and males (63.4% and 49.1%, respectively). The pandemic caused an increase in food intake and fast-food and snack consumption were not statistically different according to sex (P > 0.05). Notably, students with severe depression had the highest levels of fear of COVID-19 (r = −0.195; P < 0.05). In addition, daily energy intake was negatively correlated with restrained eating (r = −0.216; P < 0.01) and external eating (r = −0.152; P < 0.01). In contrast, energy intake was positively correlated with fear of COVID-19 (r = 0.113; P < 0.05).

Eating behaviors, depression, fear of COVID-19, resilience, and dietary intake

According to the BDI, 41.1% of the students had no or minimal depression, whereas 32.3% had mild, 20% had moderate, and 6.6% had severe depression (Table 3). Total BDI scores and depression levels of females and males were not statistically different (P > 0.05). On the other hand, the level of fear of COVID-19 among males was higher than among females (P < 0.05), whereas brief-resilience levels were higher in females than males (P < 0.05). Furthermore, total DEBQ, restrained eating, and emotional eating scores of males were higher compared with females (P < 0.05). External eating scores were not different according to sex (P > 0.05).

Correlation between eating behavior, brief resilience, depression, fear of COVID-19, and daily energy intake are shown in Table 4. Total DEBQ scores, restrained eating, emotional eating, and external eating were positively correlated with fear of COVID-19; conversely, there was a negative correlation between brief resilience and total DEBQ subscale scores (P < 0.05). Beck Depression Inventory scores were positively correlated with total DEBQ (r = 0.218; P < 0.01) and emotional eating (r = 0.222; P < 0.01). Furthermore, brief resilience and fear of COVID-19 were negatively correlated (r = −0.195; P < 0.05). In addition, daily energy intake was negatively correlated with restrained eating (r = −0.216; P < 0.01) and external eating (r = −0.152; P < 0.01). In contrast, energy intake was positively correlated with fear of COVID-19 (r = 0.113; P < 0.05).

Eating behaviors, fear of COVID-19, resilience, daily energy, and macronutrient intake among the students according to depression levels are shown in Table 5. Students with moderate and severe depression had higher total DEBQ and emotional-eating scores (P < 0.01). On the other hand, students who had moderate depression had the lowest external-eating scores (P < 0.05), whereas restrained-eating scores did not statistically differ according to depression levels (P > 0.05). Notably, students with severe depression had the highest levels of fear of COVID-19 (P < 0.05). Nonetheless, students’ daily energy and macronutrient intake was not statistically different according to depression levels (P > 0.05).
Table 3
Students’ BDI, FCV-19S, BRS, and DEBQ scale scores

| Depression level   | Female (n = 336) | Male (n = 163) | Total (n = 499) | Significance |
|--------------------|------------------|----------------|----------------|--------------|
| BDI total score    | 13.3 ± 8.8       | 11.7 ± 9.2     | 12.8 ± 8.9     | 0.073 ^     |
| None or minimal    | 128 (38.1%)      | 77 (47.2%)     | 205 (41.1%)    | 0.259 ^     |
| Mild               | 115 (38.1%)      | 46 (28.2%)     | 161 (32.3%)    |              |
| Moderate           | 69 (20.5%)       | 31 (19%)       | 100 (20.3%)    |              |
| Severe             | 24 (7.1%)        | 9 (5.3%)       | 33 (6.6%)      |              |
| FCV-19S            | 25.5 ± 4.2       | 28.9 ± 3.3     | 26.6 ± 5.4     |              |
| BRS                | 17.8 ± 1.9       | 16.3 ± 2.5     | 17.1 ± 2.1     | 0.025 ^     |
| DEBQ score         | 105.9 ± 20.9     | 114.8 ± 18.9   | 108.8 ± 20.6   |              |
| DEBQ – Restricted eating | 33.4 ± 8.6      | 36.9 ± 7.9     | 34.6 ± 8.5     |              |
| DEBQ – Emotional eating | 44.4 ± 14.9     | 49.4 ± 11.9    | 46.1 ± 14.1    |              |
| DEBQ – External eating | 28.1 ± 5.8      | 28.5 ± 5.9     | 28.2 ± 5.8     | 0.407 ^     |

BDI, Beck Depression Inventory; BRS, Brief Resilience Scale; DEBQ, Dutch Eating Behavior Questionnaire; FCV-19S, Fear of COVID-19 Scale.

*Pearson correlation P < 0.05.

As shown in Table 6, BDI and brief resilience scores were not different according to the BMI classification of the students (P > 0.05). On the other hand, underweight students had the highest total DEBQ and restrained-eating scores (P < 0.01), and underweight and obese students’ emotional-eating scores where higher than those of normal-weight and overweight students (P < 0.01).

Furthermore, overweight and obese students’ protein intake was significantly higher than that of underweight and healthy-weight students (P < 0.01). In addition, daily carbohydrate and fat intake were not statistically different according to BMI classification (P > 0.05).

Discussion
The present study was conducted to investigate the possible association of eating behaviors and nutrition status with depression, resilience, and fear concerning COVID-19 among students in Turkey. Considering the known fact that young adults are...
vulnerable in terms of mental health, including during the prepan-
demic period, it was possible that this group was more affected by
factors that worsen mental health during the pandemic period
[25,26]. Although young people are considered a less at-risk group
in terms of effects of COVID-19, they have been reported as a sus-
cetable group for the risk of experiencing COVID-19-related men-
tal disorders [26]. To date, several studies have investigated the
depression rate during the pandemic [26–28]. In the current study,
more than a quarter of the students (26.6%) had moderate or severe
depression. Similar to the current study’s findings, the rate of
moderate or severe depression was 21.8% in a study conducted
in the early phase of the pandemic in Turkey [27]. In another study
conducted among the Turkish population, people aged between 18
and 29 y had the highest level of depression during the pandemic
period among all participants [28]. Furthermore, a previous study
examining differences in mental health of university students in
nine different countries during the pandemic showed that students
in Turkey had the highest depression risk among the countries
[26]. The major causes of depression might be the rapid worldwide
spread, strict lockdown, distance learning, uncertainty of pandemic
progression, and fear and anxiety about COVID-19. Thus far, avail-
able literature has shown that females had higher levels of depres-
sion during the pandemic than males [29,30]. Previous studies
conducted in Turkey illustrated that female students’ depression
levels were higher than male students’ [31,32]. Conversely, a
recent study conducted by Lee and Crunk [33] reported that
depression levels of males were higher than females in the US.
However, in the present study, depression levels of the students
did not differ according to sex. Psychological health status of
people might vary between different countries as well as within the
same country, even among people of similar age groups and status
[26].

It has long been known that fear has triggering effects on men-
tal health and well-being [34]. Just as fear of infection during previ-
sous pandemics had negative effects on mental health, fear of
COVID-19 also has potential adverse effects [35]. In the current
study, the Fear of COVID-19 Scale measured anxiety about COVID-
19, and students with severe depression experienced more fear of
COVID-19. In accordance with these results, the available literature
revealed a similar association [36–38]. In the present study, FCV-
19S scores of male students were higher than those of female stu-
dents. Contrarily, a study conducted in India revealed that being
female was a significant factor in fear of COVID-19 among youth
[39]. A previous study conducted among Italian students showed
that male students had lower fear of COVID-19 than did females
[40]. A study conducted in Ecuador also showed that male students
had lower fear of COVID-19 [35]. This rather contradictory result of
the present study might be owed to the fact that different popula-
tions from different parts of the world have experienced the pan-
demic with different severity. The diversity of the measures and
restrictions applied in different countries might also have affected
this result.

A study carried out in the early stages of the COVID-19 pan-
demic in Australia revealed that the energy intake of undergradu-
ate students increased while their physical activity levels
decreased compared with the prepanademic period. Researchers
stated that these habits had potential undesirable effects on the
well-being and mental health of young adults in the long term
[41]. In the current study, a majority of participants declared
increased food intake, snack consumption, and frequent food-
preparation practices at home compared with the prepanemic
period. These results are in accordance with previous reports [5,6].
In the present study, no statistically significant effect of depression
level on daily energy and macronutrient intake was observed;
however, there was a significant positive correlation between fear
of COVID-19 and daily energy intake. An explanation for this result
might be that participants with a higher fear level may have used
eating behavior as a strategy for coping with fear and may have
developed unhealthy eating patterns, especially a preference for
foods with high energy density. Negative emotions and psycholog-
ical states generally have been characterized by a higher daily
energy intake [42,43]. One possible explanation for the reason
energy and macronutrient intake did not significantly differ
according to depression levels in the present study might be the
fact that lockdowns, restrictions, and consequent boredom during
the pandemic had a similar effect on food consumption regardless
of the severity level of depression.

Data from several studies suggest that risk of contamination
and disease, social isolation, uncertainty, and exhaustion cause
stress and might affect behavior, including eating habits, as well as
mental health [44–46]. In the present study, total DEBQ,
restrained-eating, and emotional-eating scores among males were
higher than among females. Furthermore, external eating was not
statistically different between sexes. On the contrary, previous
studies’ results indicated that restrictive, emotional, and external
eating behaviors were more prevalent among females. Kalkan

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Table 6
Scores of DEBQ, BRS, BDI, and FCV-19S scales and daily energy and macronutrient intake according to BMI classification

| BMI classification | Underweight (n = 57) | Healthy weight (n = 331) | Overweight (n = 95) | Obese (n = 36) | Significance a |
|--------------------|---------------------|-------------------------|--------------------|--------------|---------------|
| BDI total score    | 10.7 ± 7.6          | 12.6 ± 8.8              | 14.2 ± 9.7         | 13.1 ± 9.7   | 0.222         |
| DEBQ total score   | 120.8 ± 18.9        | 109.2 ± 20.4            | 104.4 ± 19.1       | 98.4 ± 25.8  | <0.001        |
| Restrainted eating| 43 ± 5.9            | 34.1 ± 8.6              | 33.4 ± 7.1         | 33.5 ± 9.8   | <0.001        |
| Emotional eating   | 50.6 ± 13.4         | 37.9 ± 15.4             | 43.1 ± 13.8        | 46.7 ± 14.1  | 0.002         |
| External eating    | 27.2 ± 6.1          | 28.4 ± 5.8              | 28 ± 5.9           | 27 ± 5.6     | 0.491         |
| FCV-19S            | 25.1 ± 4.8          | 26.3 ± 5.4              | 27.8 ± 5.8         | 29.7 ± 3.8   | 0.004         |
| BRS                | 17.9 ± 1.7          | 17.6 ± 2.1              | 17.4 ± 2.4         | 17.6 ± 1.5   | 0.622         |
| Energy intake, kcal/d| 1864.7 ± 451.1      | 1586.2 ± 488.7          | 1788.6 ± 697.6     | 1897.8 ± 932.9| 0.009         |
| Protein intake, g/d| 59.9 ± 16.1         | 59 ± 20.7               | 68.6 ± 29.8        | 70.7 ± 29.2  | 0.004         |
| Carbohydrate intake, g/d| 186.3 ± 57.5      | 167.9 ± 64.7            | 193.9 ± 87.7       | 202.6 ± 115.6| 0.10          |
| Fat intake, g/d    | 76.5 ± 24.7         | 73.9 ± 26.1             | 79.9 ± 34.8        | 87.3 ± 44.4  | 0.181         |

BDI, Beck Depression Inventory; BMI, body mass index; BRS, Brief Resilience Scale; DEBQ, Dutch Eating Behavior Questionnaire; FCV-19S, Fear of COVID-19 Scale.

*Analysis of variance; means with different letters (a or b) in the same row are significantly different (P < 0.05).

1P < 0.05.

2P < 0.001.
Moreover, underweight and obese students had higher levels of restrictive, emotional, and external eating behavior than male students. Similarly, another study conducted in Turkey showed that emotional and external eating behaviors were more prevalent among female than male university students [46]. Although the research was conducted on the same country’s population, reasons such as a different data collection time, levels of knowledge about the pandemic, long-term effects of the pandemic, different characteristics of the student groups included in the studies, and inclusion and exclusion criteria of the studies might have affected these contrary results.

It is well known that resilience is associated with coping strategies of a person and might be helpful for fighting against the effects of stress factors [7]. Furthermore, resilience is considered an important factor in decreasing and preventing the undesirable psychological effects of COVID-19 [47]. A negative correlation between fear of COVID-19 and psychological resilience was found in this study. In accordance with the present results, studies conducted in the Philippines [48] and China [49] illustrated that fear had a negative correlation with resilience among students during the pandemic. In addition, a study conducted in the earlier stages of the pandemic revealed that psychological resilience was negatively correlated with depression in the adult Turkish population [32]. However, no significant correlation between resilience and depression was observed in the present study. In spite of that, there was a negative correlation between total DEBQ and resilience scores. Furthermore, total DEBQ scores were positively correlated with BDI scores and fear of COVID-19. In our study, the highest total DEBQ and emotional-eating scores were observed in moderately and severely depressed students. Emotional-eating behavior is defined as a tendency to eat that arises in response to emotional situations and is closely related to many states such as stress, anxiety, depression, and negative moods [50]; the current study showed an association of depressive severity with total DEBQ scores and emotional-eating behavior. These results are consistent with a previous study conducted among the Turkish adult population in which a relationship between fear, depression, and emotional eating was found during the pandemic period [51]. However, another study conducted in Turkey [52] showed that the effect of fear of COVID-19 on emotional eating was minimal. Moreover, restrained, emotional, and external eating were negatively correlated with BRS scores and positively correlated with fear of COVID-19. Results of this study showed that higher levels of fear and depression and lower psychological resilience negatively affected eating behavior of students. A previous study by Usubini et al. [53] indicated that depression, anxiety, and stress were related to emotional eating in Italian young adults during the second-wave lockdown of the pandemic.

Recent meta-analyses revealed an association between obesity and depression [54,55]. A study conducted in Turkey during the pandemic revealed that nursing students who were overweight had higher depression levels [31]. However, in the current study, although BDI scores of overweight and obese students were higher than those of normal-weight and underweight students, this difference was not statistically significant. Besides, overweight students had the highest total DEBQ and restrained-eating scores. Moreover, overweight and obese students’ emotional-eating scores were higher than those of other students. In accordance with the present study’s results, Kalkan Ugurlu et al. [31] found that obese Turkish nursing students had higher emotional, restrictive, and external eating behavior than did other students. Likewise, Cecchetto et al. [45] reported that DEBQ emotional-eating scores were statistically significantly higher in those who had a higher BMI among the Italian population during the pandemic. In the present study, obese students had greater fear of COVID-19 than did underweight students. Obesity poses a risk for COVID-19 owing to the presence of accompanying diseases and inflammation [56]. A possible explanation for why obese participants had a higher level of fear might be that obesity is an important factor in the severity of COVID-19 infection.

Conclusions

This study supports the view that the psychological and nutritional well-being of students has been affected by COVID-19 pandemic. The total DEBQ and emotional-eating scores were found to be positively linked with more severe levels of depression. Fear of infection, the pandemic situation, a new daily routine, unexpected lockdowns, and implementation of online classes might be potential reasons for stress and changes related to eating behaviors. To relieve adverse mental health conditions, students should increase their awareness of stress-related eating outcomes and should be guided toward individual healthy food choices and eating habits.

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