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# Has the pandemic affected academic personnel's nutrition habits in Türkiye?

## *A pandemia afetou os hábitos nutricionais do pessoal acadêmico na Turquia?*

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## ABSTRACT

### Objective
Analyze the impact of the pandemic period on the healthy living, nutrition and anxiety states of university academic personnel.

### Methods
Cross-sectional study with a probabilistic sample of 507 academic personnel from Bursa Uludag University, Bursa, Türkiye. Changes in consumption amounts of food and beverages and lifestyle were determined through a prepared questionnaire, and anxiety states were determined through the Beck Anxiety Inventory. Statistical analyses of the study were performed with IBM®SPSS® 23.0 program. The Pearson Chi-square test, Yates correction, and Fisher's exact test were used to compare variables.

### Results
During the pandemic, the rate of eating and the use of additional vitamins and minerals were significantly higher in women ($p$=0.03, $p$<0.001, respectively). In the pandemic period, male participants consumed more fish than women ($p$=0.037), and women consumed more coffee than men during this period ($p$=0.004). Compared to the pre-pandemic period, those who regularly eat breakfast have increased, while those who regularly eat lunch and dinner have decreased. It was determined that as the BAI score increased, the sleep duration gradually decreased ($p$=0.001), and the consumption of canned food and the use of takeaway food increased ($p$=0.011, $p$=0.001, respectively). It was stated that the weight of the participants increased, except for those with minimal anxiety.

### Conclusion
It was found that most of the participants tended to consume more food during the pandemic period. It was observed that the rate of those who gained weight during the pandemic was

higher. Despite this, it has been determined that healthier choices are made as the consumption of some food increases. The level of anxiety was found to be more positive than in some similar studies. Education level may have a partial effect on choosing healthy food and coping with anxiety.

**Keywords**: Academic personnel. Anxiety. COVID-19. Nutrition. Risk groups.


## *RESUMO*

***Objetivo***

*Analisar o impacto do período pandêmico na vida saudável, na nutrição e nos estados de ansiedade do pessoal acadêmico universitário.*

***Métodos***

*Estudo transversal com amostra probabilística de 507 acadêmicos da Bursa Uludag University, Turquia. As alterações nas quantidades de consumo de alimentos e bebidas, e no estilo de vida foram determinadas através de um questionário elaborado, e os estados de ansiedade foram determinados através do Inventário de Ansiedade de Beck. As análises estatísticas do estudo foram realizadas no programa IBM®SPSS® 23.0. O teste Qui-quadrado de Pearson, correção de Yates e o teste exato de Fisher foram utilizados para comparação das variáveis.*

***Resultados***

*Durante a pandemia, a taxa de alimentação e o uso de vitaminas e minerais adicionais foram significativamente maiores nas mulheres (p=0.03, p<0.001, respectivamente). Durante o período pandêmico, os participantes do sexo masculino consumiram mais peixe do que as mulheres (p=0.037), e as mulheres consumiram mais café do que os homens durante esse período (p=0.004). Em comparação com o período pré-pandemia, o número de pessoas que tomam regularmente o café da manhã aumentou, enquanto o número de pessoas que almoçam e jantam regularmente diminuiu. Foi determinado que à medida que o escore BAI aumentava, a duração do sono diminuía gradativamente (p=0.001), o consumo de alimentos enlatados e o uso de alimentos para viagem aumentavam (p=0.011, p=0.001, respectivamente). Afirmou-se que o peso dos participantes aumentou, exceto aqueles com ansiedade mínima.*

***Conclusão***

*Verificou-se que a maioria dos participantes tendeu a consumir mais alimentos durante o período pandêmico. Observou-se que o índice de quem engordou durante a pandemia foi maior. Apesar disso, constatou-se que escolhas mais saudáveis são feitas à medida que aumenta o consumo de alguns alimentos. O nível de ansiedade foi considerado mais positivo do que alguns estudos semelhantes. O nível de escolaridade pode ter um efeito parcial na escolha de alimentos saudáveis e no enfrentamento da ansiedade.*


***Palavras-chave***: *Pessoal academico. Ansiedade. COVID-19. Nutrição. Grupos de risco.*

## INTRODUCTION

The World Health Organization (WHO) declared the Coronavirus Disease 2019 (COVID-19) a global pandemic [1]. The main clinical symptom of COVID-19 is the presence of respiratory symptoms [2]. The cardiovascular and neurological systems are the source of other symptoms [3]. Advanced age (≥65 years) and additional diseases are associated with disease severity in China. Cardiovascular disease and diabetes have the highest mortality rates in comorbidities with COVID-19, followed by respiratory diseases, hypertension, and cancer [4].

As COVID-19 can cause a number of long-term health issues, it is crucial to develop appropriate eating habits to lower susceptibility [5]. There were negative changes in eating habits during the pandemic period, decreased activity [6-9], and increased smoking [9].

Good nutrition is an important part of the defense against COVID-19. The Western-style diet includes high proportions of processed and refined foods, sugar, salt, fat, and red meat [10]. The WHO states that people who follow a balanced diet have stronger immune systems, and a lower risk of chronic and infectious diseases. Therefore, the WHO recommends eating fresh and

unprocessed food every day to ensure your body receives the necessary vitamins, minerals, dietary fibre, proteins, and antioxidants. Experts emphasize the importance of drinking enough water, consuming moderate amounts of solids and oil, and consuming less salt and sugar [11].

According to the research reports conducted in Türkiye (Turkish Ministry of Health General Directorate of Public Health, Türkiye Nutrition Guide 2015), it is advised to enhance the consumption of fresh vegetables and fruits, whole grains, legumes, milk and dairy products, fish and shellfish, fibre, and vitamin D [12]. It is well acknowledged that the pandemic period has a negative effect on our lifestyle, and research supports this perspective. This study aimed to assess the changes in dietary patterns and anxiety levels among the academic personnel of Bursa Uludag University (BUU, Türkiye) during the pandemic period.

## METHODS

### Population and Sample of the Research

The survey, which lasted for four weeks (May, 2021), was directed to approximately 1460 academic personnel (Faculty members and administrative staff) in BUU.

### Method

The questionnaire form in the study was developed by adapting the forms prepared to learn the individual characteristics of the clients in the hospital diet outpatient clinics, taking professional experiences, literature review, and expert opinions. Additionally, previous academic studies on similar subjects were evaluated. Before finalizing the prepared survey, a pilot study was conducted with three clients. To maintain the research's reliability, the data collected from the pilot study were excluded from the primary dataset. Academics who are experts in the field also checked the survey. The survey includes a total of 8 open-ended demographic questions, 31 questions to broadly determine the dietary pattern changes during the pandemic, and 3-Likert scale questions. Likert Scale questions prepared to determine eating habits [13] and lifestyle changes [14] reveal the differences experienced by the participants before and after the pandemic. These questions aim to determine how the participants' dietary patterns changed during the pandemic period compared to the period before the pandemic, as well as how the consumption of food and beverage groups changed during the pandemic period.

The purposeful sampling method was used to include the individuals best suited for the research [15]. In this method, participants must have certain characteristics and meet certain criteria. Research participants should better understand the research logic for the purpose and have sufficient knowledge about the subject [16]. For this reason, 507 academic personnel of BUU participated.

After obtaining the approval of the university's ethics committee, an online address was created for the survey, and an application was made to the University Public Relations unit with a petition to send to the academic personnel via e-mail. The questionnaire consists of four sections. The demographic characteristics of the respondents comprise the 1st section, which consists of 8 questions. In this section, the demographic characteristics of the academic personnel participating in the survey, their personal characteristics such as weight, height, Body Mass Index (BMI), current diseases, medications they use, whether they or any member of their family has contracted corona,

the presence of health problems related to nutrition, activity status, cigarette consumption, sleep duration, water consumption, use of nutritional supplements, preference for ready-made foods, frequency of using takeaway food services, disinfection practices in the kitchen, etc. have been questioned.

In the 2nd section, a comparison of the dietary patterns of academic personnel was made before and during the pandemic including breakfast, brunch, lunch, afternoon, dinner, and night meals. For this section, participants were offered the options of "regular", "irregular," and "I do not have this meal.".

The 3rd section questioned the changes in food group consumption during the pandemic period with the aim of identifying the trends in the pandemic among the food groups. In addition to milk, yogurt, red and white meat, eggs, legumes, grains, vegetables, and fruits from the food groups, consumption of onion, garlic, and immunity-supporting spices such as lemon, ginger-sumac, nuts, black tea, herbal teas, coffee, and soft drinks, as well as consumption of bee products such as royal jelly, pollen, propolis, and probiotics such as kefir, vinegar, pickles, and turnips, was questioned. For each food group, were presented the options: "I ate/drank the same amount"; "I ate/drank less"; "I ate/drank more"; and, "I don't have this meal".

In the 4th section, the "Beck Anxiety Scale" was used to determine anxiety levels during the pandemic period, and it was used by all participants (with or without symptoms). Beck Anxiety Inventory (BAI) was utilized to determine the participants' anxiety levels, consisting of 21 questions. The purpose of the scale is screening rather than diagnosis. It is used to evaluate the anxiety symptoms experienced by the individual. The validity and reliability study of this scale, developed by Beck et al. [17] was conducted by Ulusoy et al. [18] in Türkiye. It is a Likert-type evaluation scale ranging from 0 to 3. The final test score determines the level of anxiety. As a result of this scale, the level of anxiety is expressed as minimal level (0-7 points), mild level (8-15 points), moderate level (16-25 points), and severe level (26-63 points).

### Ethical Aspect of Research

In order to carry out the research, approval was obtained from the Republic of Türkiye Ministry of Health with registration number 2020-10-07T12-35-04. An application was made to the BUU ethics committee to administer the survey at BUU. The suitability of the study was notified by the University's decision dated March 31, 2021, session numbered 2021-03. The survey data was gathered in May of 2021.

### Statistical Evaluation

Statistical analyses of the study were performed with IBM®SPSS® 23.0 program. Analysis results are shown as mean ± standard deviation for quantitative data and as frequency (percentage) for categorical data. The Pearson Chi-square test, Yates correction, and Fisher's exact test were used to compare variables ($p$<0.050).

## RESULTS

The questionnaire conducted within the scope of this study was answered by 507 academic personnel (34.7%) working at BUU.

Table 1 describes the demographic characteristics of the participants. The mean age of the participants in the study was 43.20±9.39. Most of the participants are women (59.8%), married (70.4%), and living in an apartment (82.2%).

**Table 1** – Demographic characteristics of participants. Bursa Uludag University, Bursa, Türkiye (2021).

| Variables | n | % |
|---|---|---|
| Gender | | |
| Female | 303 | 59.8 |
| Male | 204 | 40.2 |
| Age | | |
| ≤34 | 114 | 22.5 |
| 35-44 | 168 | 33.1 |
| 45-54 | 150 | 29.6 |
| 55≤ | 75 | 14.8 |
| Body mass index | | |
| <18.5 | 9 | 1.8 |
| 18.5-24.9 | 246 | 48.5 |
| 25.0-29.9 | 198 | 39.0 |
| 30.0< | 54 | 10.7 |

The mean BMI of the participants was 25.29±4.63. All of the participants who had a BMI below 18.5 were women. Conversely, among those with a BMI of 30 or higher, 72.2% were male and 27.8% were female. Furthermore, 45.5% of participants gained weight during the pandemic period, compared to 9.5% losing weight.

Most of the participants didn't have any disease (65.7%), while 8.3% of those with a disease had hypertension and 5.9% had diabetes. Most of the participants did not have COVID-19 (85.8%). It was observed that COVID-19 and chronic diseases were rarely seen in the individuals who lived together with the participants. The majority of the participants were not vaccinated for influenza (84%) or pneumonia (91.1%).

During the pandemic period, there was a decrease in smoking and alcohol use among the participants (8.9% and 8.2%, respectively), and 62.1% of the participants stated that they use additional vitamins and minerals. Furthermore, the participants' water consumption increased by 27.8%, while their sleep and sports activity durations decreased by 27.8% and 55.6%, respectively. Also, there was an increase in the participants' eating speed (29%).

During this period, the rate of eating and the use of additional vitamins and minerals were significantly higher in women ($p$=0.03, $p$<0.001, respectively). 72.8% of the participants applied additional disinfection procedures (soaking vegetables and fruit in vinegar water, wiping packaged products, etc.) during the pandemic.

Figure 1 includes the change in the consumption amounts of food during the pandemic period. More than half of the participants stated that they consumed the same amounts of other foods questioned, except nuts during the pandemic period. Those participants whose consumption amounts changed, mostly consumed nuts, followed by fresh and dried fruits.

Those who stated that their consumption amounts had changed were consuming less kefir, white bread, rice, pasta, bakery products, soft drinks and more of all other nutrients.

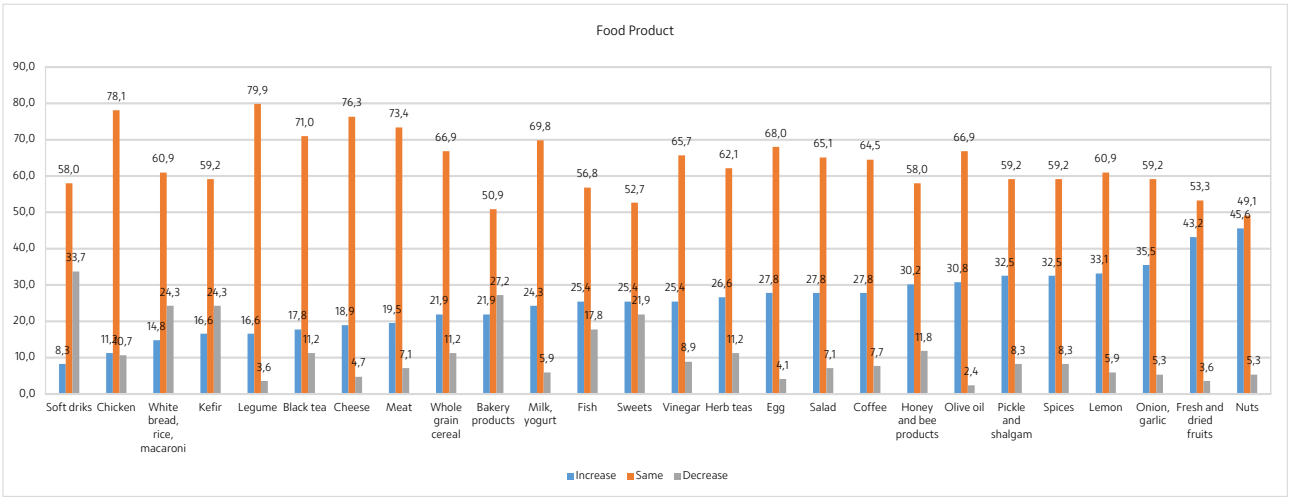


**Figure 1** – Change of Consuming Habits.

During the pandemic, male participants consumed cheese, fish, bakery products, soft drinks more than women. In these foods, only fish had a significant difference between the sexes ($p$=0.037). Other foods had a higher proportion of female participants than men. Among these, a significant difference between the sexes was found in coffee alone ($p$=0.004).

The evaluation of the eating habits (meal regularity) of before and during the pandemic periods is given in Table 2. Compared to the pre-pandemic period, those who regularly eat breakfast have increased, while those who regularly eat lunch and dinner have decreased. When the meals were evaluated among themselves, it was found that there was a significant difference between the meal patterns before the pandemic and during the pandemic period.

**Table 2** – Pre-pandemic and pandemic eating regularity. Bursa Uludag University, Bursa, Türkiye (2021).

| Meals | Consumption before pandemic | | | | Consumption in pandemic | | | | $p^*$ |
|---|---|---|---|---|---|---|---|---|---|
| | Regular | | Irregular | | Regular | | Irregular | | |
| | n | % | n | % | n | % | n | % | |
| Breakfast (n=480) | 372 | 77.5 | 108 | 22.5 | 402 | 83.8 | 78 | 16.2 | 0.001 |
| Brunch (n=138) | 30 | 21.7 | 108 | 78.3 | 39 | 28.3 | 99 | 71.7 | 0.001 |
| Lunch (n=420) | 315 | 75.0 | 105 | 25.0 | 243 | 57.9 | 177 | 42.1 | 0.001 |
| Afternoon (n=171) | 51 | 29.8 | 120 | 70.2 | 57 | 33.3 | 114 | 66.7 | 0.001 |
| Dinner (n=501) | 489 | 97.6 | 12 | 2.4 | 459 | 91.6 | 42 | 8.4 | 0.001 |
| Night meal (n=171) | 51 | 29.8 | 120 | 70.2 | 51 | 29.8 | 120 | 70.2 | 0.001 |

Note: $^*p$<0.050.

Table 3 includes the change in food consumption according to the BAI. The BAI score means of the participants was 1.79±0.97. It was found that as the BAI score increased, the sleep duration of the participants gradually decreased, and this difference was significant ($p$=0.001). During the pandemic period, canned food consumption and takeaway food service usage increased as the BAI score increased ($p$=0.011, $p$=0.001, respectively). Although participants generally stated that they used fewer cigarettes and alcohol during the pandemic, there was an increase in cigarette use in those with moderate and severe BAI scores showed an increase in cigarette use. There was an increase in the weight of the participants except those with minimal anxiety.

**Table 3** – Change of food consumption during the pandemic period according to Beck anxiety inventory score. Bursa Uludag University, Bursa, Türkiye (2021).

| Variables | BECK anxiety inventory | | | | | | | | $p^*$ |
|---|---|---|---|---|---|---|---|---|---|
| | Minimal level (n=261) | | Mild level (n=135) | | Intermediate level (n=69) | | Severe level (n=42) | | |
| | n | % | n | % | n | % | n | % | |
| Red meat consumption | | | | | | | | | |
| Same | 216 | 82.8 | 99 | 73.3 | 45 | 65.2 | 12 | 28.6 | 0.002 |
| More | 30 | 11.5 | 27 | 20.0 | 21 | 30.4 | 21 | 50.0 | |
| Less | 15 | 5.7 | 9 | 6.7 | 3 | 4.4 | 9 | 21.4 | |
| Legumes consumption | | | | | | | | | |
| Same | 240 | 92.0 | 90 | 66.7 | 54 | 78.3 | 21 | 50.0 | 0.002 |
| More | 15 | 5.7 | 39 | 28.9 | 12 | 17.4 | 18 | 42.9 | |
| Less | 6 | 2.3 | 6 | 4.4 | 3 | 4.3 | 3 | 7.1 | |
| White bread, rice consumption | | | | | | | | | |
| Same | 171 | 65.5 | 78 | 57.8 | 39 | 56.5 | 21 | 50.0 | 0.006 |
| More | 24 | 9.2 | 21 | 15.5 | 9 | 13.0 | 21 | 50.0 | |
| Less | 66 | 25.3 | 36 | 26.7 | 21 | 30.5 | 0 | 0.0 | |
| Fresh and dried fruit consumption | | | | | | | | | |
| Same | 177 | 67.8 | 63 | 46.7 | 24 | 34.8 | 6 | 14.3 | 0.002 |
| More | 78 | 29.9 | 69 | 51.1 | 39 | 56.5 | 33 | 78.6 | |
| Less | 6 | 2.3 | 3 | 2.2 | 6 | 8.7 | 3 | 7.1 | |
| Olive oil consumption | | | | | | | | | |
| Same | 219 | 83.9 | 69 | 51.1 | 33 | 47.8 | 18 | 42.9 | 0.001 |
| More | 42 | 16.1 | 66 | 48.9 | 27 | 39.1 | 21 | 50.0 | |
| Less | 0 | 0.0 | 0 | 0.0 | 9 | 13.0 | 3 | 7.1 | |
| Vinegar consumption | | | | | | | | | |
| Same | 195 | 74.7 | 78 | 57.8 | 33 | 47.8 | 27 | 64.3 | 0.021 |
| More | 54 | 20.7 | 48 | 35.5 | 21 | 30.4 | 6 | 14.3 | |
| Less | 12 | 4.6 | 9 | 6.7 | 15 | 21.8 | 9 | 21.4 | |
| Lemon consumption | | | | | | | | | |
| Same | 183 | 70.1 | 72 | 53.3 | 33 | 47.8 | 21 | 50.0 | 0.042 |
| More | 66 | 25.3 | 57 | 42.2 | 33 | 47.8 | 12 | 28.6 | |
| Less | 12 | 4.6 | 6 | 4.5 | 3 | 4.4 | 9 | 21.4 | |

Note: $^*p<0.050$.

The rate of the participants who stated that they consumed more red meat, legumes, white bread, rice, pasta, fresh and dried fruits, as well as olive oil during the pandemic increased as the BAI score increased, and the difference was found to be significant.

## DISCUSSION

The results of the Türkiye Nutrition and Health Survey-2019 on meal order show that most of the individuals aged 15 and over do not skip meals regarding main meals [19].

In this study, conducted with BUU academic personnel; it was determined that there was a significant change in all meals in terms of diet, and eating snacks mostly became a regular habit. While breakfast was the most regularly taken meal in the pandemic, the most disrupted meal was lunch. Academic personnel continued to go to work during the pandemic. Due to the closure of the available catering places, they had to satisfy their eating needs at the university dining hall. However, because of the closed environment and the crowds in the dining hall, they may have chosen not to eat their lunch during this period. The increased speed of eating can be attributed to the effort put into trying not to stay in the dining hall for an extended period of time because it is a crowded environment.

When individuals respond to stress caused by quarantine by eating more, it is seen that the selected foods are mostly high in sugar and fat [20]. Similarly, this study revealed a higher consumption of certain carbohydrate and fat foods. It was determined that for the participants whose food consumption patterns had changed, they consumed more milk, cheese, chicken meat, fish meat, red meat, eggs, legumes, whole grain products, sweets, honey, and other bee products, salad, pickles and turnips, onions and garlic, fresh and dried fruits, nuts, olive oil, vinegar, lemon, spice, black tea, herbal tea, and coffee. In this period, there was an increase in the use of whole wheat bread, while the use of white bread decreased; and this was probably because the aim was to increase immunity and control weight gain by increasing the intake of fibre. The consumption of nuts increased the most, followed by consumption of the fruits. The increase in the irregularity of snacks and the consumption of nuts and fruits as snacks in general may explain the increased consumption of these foods.

There are studies showing that the total number of meals, snacks between meals, or night snacks increased significantly during the restriction period, and thus, more food was eaten [9,21,22]. A previous study in our country found that participants consumed more regular breakfast and snacks during the pandemic period, but skipped lunch [23]. The findings regarding breakfast and lunch were similar to those of this study.

During the pandemic, changes in dietary patterns were observed, with an increase in consuming more sweets, snacks, and frozen/canned foods and a decrease in consuming fruits and vegetables [7]. Similarly, Morais et al. [24] reported that the daily rate of eating sweets in adolescents increased during the pandemic period. Blaszczyk-Bebenek et al. [21] reported a considerable increase in the consumption frequency of eggs, potatoes, sweets, and canned meat. However, the consumption of health-promoting products such as vegetables, fruits, and brine has remained unchanged. In this study, participants who ate more legumes had a higher rate than those who ate less. Furthermore, in contrast to some comparable studies, there was an increase in fruit and vegetable consumption.

Due to the concern about access to food during the pandemic, people may have turned to buying packaged and long-lasting foods instead of fresh food. Packaged foods contain salt, sugar, or trans-fat, while a diet limited to fresh vegetables and fruits means a low intake of antioxidants and vitamins [20]. Antioxidants have protective properties in lung infection and inflammation [23]. Researchers recommend using polyphenols from fruits and vegetables, cereals, green tea, and red wine to combat influenza [25]. In some cases, taking vitamin and mineral supplements may also help [20]. Research indicates that individuals in quarantine often consume vitamin and mineral supplements [22,23].

In this study, the rate of consuming canned food and using takeaway food service increased during the pandemic, but remained low compared to those who did not use it. Limited use of packaged products can be considered positive for the immune system. The majority of the participants stated that they disinfected both fresh and packaged products with additional applications (soaking in vinegar water, using food disinfectants, wiping packaged products, etc.). The participants primarily focused on hygiene practices related to food and virus control. Furthermore, the proportion of those who used additional vitamins and minerals during the pandemic period was higher than that of those who did not. Additional vitamin-mineral use was significantly higher in women than in men. The fact that the use of vitamin and mineral supplements is higher than in other studies may be related to the education level of the study group.

Vegetables and fruits are natural sources of vitamins, minerals, and antioxidants [26]. Vitamin C is important in preventing and treating the common cold, and foods rich in vitamin C can be included

in meals [27]. Vitamin D is known to stimulate innate immunity and regulate acquired immunity [28]. Adequate intake of zinc, selenium, and vitamin D is necessary for the control of viral infection and inflammation, and for strengthening immunity [29,30]. A deficiency may lead to a decrease in immune defense against the coronavirus, thereby accelerating the progression of the disease [31]. In this study, those who stated that their consumption of vegetables and fruits increased were more than those who stated that they decreased. Considering the antioxidants, vitamins, and minerals, as well as the high fibre content of vegetables and fruits, increased consumption may contribute to disease control.

Omega-3, polyunsaturated fatty acids, and probiotics also increase the resistance to upper respiratory tract infection [32]. In this study, the participants who stated that they consumed more fish, which is a source of omega-3, consumed more than those who stated that they consumed less. The proportion of male participants who stated that their fish consumption increased was significantly higher than that of females. While women tend to use more vitamin and mineral supplements to support their immunity, men are willing to get omega-3 from natural sources of fish.

Probiotics also have stimulating effects on the immune system and antibody production [25]. The gut can act as a reservoir for the coronavirus [33,34]. Diet is very crucial for shaping the gut microbiota [35]. In this study, the consumption of probiotic foods such as yogurt, kefir, cheese, pickles, turnips, and vinegar was questioned. The participants stated that they consumed these foods more, except for kefir, during the pandemic period. In addition, the rate of those who stated that their consumption of legumes, whole grain products, vegetables, onions, garlic, and fruits, which are the food sources of probiotic bacteria, increased during the pandemic period was higher than the rate of those who decreased their consumption of these types of foods.

Obesity may also be linked to various lung diseases that accompany COVID-19 [36]. A healthy diet and physical activity are important for weight control [37]. Physical activity affects both mental and physical health and is part of the treatment for most chronic diseases [38]. During the pandemic period, the level of movement among people decreased, which led to unhealthy living habits and increased risk of disease [39]. The effect of obesity during the pandemic was evaluated with various studies, and it was observed that those patients with obesity ended up needing more mechanical ventilation, and a higher rate of death occurred [4]. There are studies showing that those who are overweight, obese, and older tend to gain weight, while those who are underweight tend to lose weight [9]. Studies conducted during the pandemic period show that those who gain weight are more in numbers than those who lose weight [9,22].

Nearly half of the participants in this study had healthy BMI values. The rate of obese people is lower than the average in Türkiye and the world [40]. However, the rate of those who stated that their weight increased was higher than that of those who stated that their weight decreased or did not change. Most of the participants stated that their physical activity decreased. It can be said that the closure of gyms during the pandemic period, and the restrictions imposed on social life, had a significant impact on the reduction of physical activity. Less exercise, boredom, anxiety, depression, unhealthy eating, and high consumption of grains and sweets were associated with higher weight gain. During the pandemic, most individuals did not exercise, reduced their physical activity levels, and exhibited many unhealthy eating behaviors [6,7,22,41-43]. Changing dietary habits, irregular meals, decreased physical activity, sleep disorders, anxiety, and stress during the pandemic period could be associated with weight gain.

It has been shown that mental health problems can occur in those who suffer from the pandemic disease during epidemics [44]. Responses to acute or chronic stress have been found to

be related to behaviors such as alcohol consumption, smoking, and eating [20]. When the literature is examined, results showing both an increase and a decrease in alcohol and cigarette use during the pandemic period are encountered [8,9,22]. Most of the participants in this study who used cigarettes and alcohol stated that they used them less during the pandemic period. However, it was found that cigarette use increased with the increase in anxiety levels. Isolation from the social environment could be associated with this outcome.

There are also studies where about half of the participants reported moderate to severe anxiety associated with COVID-19 [45], with about a third showing depressive or anxious symptoms [46]. In this study, about one-fifth of all participants had moderate-to-severe anxiety. The lethal effect of the disease, its severity, contagiousness, and uncertainty about the disease may have affected participants' anxiety levels. However, the fact that it is lower than other studies may be due to the participants' education, which can provide common sense and awareness.

The increasing anxiety and stress of COVID-19 can significantly affect individuals' sleep status [47]. An increase in anxiety levels leads to an increase in desert and meat consumption, while vegetable and fruit consumption decreases [23]. In this study, as the level of anxiety increased, the duration of sleep decreased, the use of canned food increased, and the level of benefit from takeaway food service increased. As the anxiety level increased, the proportion of those who ate red meat, legumes, white bread, rice, pasta, fresh and dried fruit, and olive oil increased; the difference was also significant.

Disruption of sleep and eating patterns with anxiety, as well as a tendency to eat ready-to-eat foods, are consistent with similar studies. 42.9% of participants with the highest BAI score (severe anxiety level) stated that they ate more cheese; the difference was not significant. Most people prefer to eat cheese for breakfast. The decrease in sleep time the increase in anxiety level, and the regular breakfast, may have affected this outcome.

## CONCLUSION

The pandemic period has led to changes in the healthy living habits of BUU academic personnel. Our results show that most of the participants in this study tended to consume more food during the pandemic period. The rate of those who gained weight during the pandemic was found to be higher. This may be due to changes in dietary patterns, an increased tendency to eat more, consumption of more eaten foods mainly at night meals and other snacks, a decrease in sleep and physical activity levels, and increased eating speed. All these factors may also be related to anxiety.

Although similar results have been obtained in other studies, it has been determined that healthier choices are made in food preferences, such as reducing white bread consumption and increasing whole wheat bread consumption. The fact that the anxiety level is more positive than some similar studies may reveal the effect of the education level in coping with the pandemic process. As the education level of individuals increases, although not significantly, it is possible to remain less affected by extraordinary situations like pandemics and maintain healthier daily life practices.

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