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Nutrition Modification in the COVID-19 Quarantine Process: Focus on Sleep Alteration, Anxiety and Happiness Factors

COVID-19 Karantina Sürecinde Beslenme Değişikliği: Uyku Değişikliği, Kaygı ve Mutluluk Faktörleri Odaklı Bir Çalışma

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Abstract

Objective: Coronavirus disease-2019 pandemic has made the quarantine process essential to protect public health and prevent the risk. The aim of this study was to evaluate the effect of the quarantine process applied in Turkish speaking population on nutritional changes. Additionally, the relationship between nutritional and sleep pattern changes, anxiety and happiness status was evaluated.

Materials and Methods: A questionnaire form was applied via the Google Forms application. General information was questioned with a socio-demographic form. Changes in nutrition and sleep patterns were obtained with closed-ended questions asked using the self-assessment method, and the levels of anxiety and happiness were obtained using the Likert-type question technique.

Results: Total of 900 people who completed the questionnaire were included. Almost half of the participants reported that they experienced nutritional changes and 54.1% did not. Also, it was determined that females experienced more than males ($p \leq 0.001$). Participants reported that the quarantine process also caused sleep pattern changes. However, nutritional changes were also found to be significantly higher in participants who experienced sleep pattern changes. It was shown that increased happiness and anxiety levels were associated with nutritional changes ($p \leq 0.001$). Regardless of nutrition, sleep pattern changes were more common who reported high anxiety and better happiness status ($p \leq 0.001$). It was found that females had more sleep problems than males during the quarantine period ($p=0.006$).

Conclusion: People responsible for public health should be aware of crisis processes such as quarantine may cause short and/or longterm health problems in public health and should try increasing social and individual awareness

Keywords: Nutrition, sleep patterns, anxiety and happiness status

Öz

Amaç: Koronavirüs hastalığı-2019 pandemisi, halk sağlığını korumak ve riski önlemek için karantina sürecini zorunlu hale getirmiştir. Bu çalışmanın amacı, Türkçe dilini konuşan popülasyonda uygulanan karantina sürecinin beslenme değişikliği üzerine etkisini değerlendirmektir. Ayrıca bu çalışmada, beslenme ve uyku düzeni değişiklikleri ile kaygı ve mutluluk durumu arasındaki ilişki de değerlendirilmiştir.

Gereç ve Yöntem: Çalışmada Google Forms uygulaması kullanılarak anket formu oluşturulmuş ve bu anket formu ile bilgiler toplanmıştır. Genel bilgiler sosyo-demografik bilgi formu ile sorgulanmıştır. Beslenme ve uyku düzenindeki değişiklikler ise öz değerlendirme yöntemiyle sorulan kapalı uçlu sorularla değerlendirilmiş ve Likert tipi soru tekniğiyle de kaygı ve mutluluk düzeyine ilişkin bilgiler elde edilmiştir.

Bulgular: Anket formunu eksiksiz dolduran ilk 900 kişi çalışmaya dahil edilmiştir. Katılımcıların neredeyse yarısı beslenme değişiklikleri yaşadığını ve %54,1'i ise yaşamadığını bildirmiştir. Ayrıca kadınların erkeklere göre daha fazla beslenme düzeninde değişiklik yaşadığı belirlenmiştir ($p \leq 0,001$). Aynı zamanda katılımcılar, karantina sürecinin uyku düzelerinde de değişikliğe neden olduğunu beyan etmiştir. Bununla birlikte, uyku düzeni değişiklikleri yaşayan katılımcılarda beslenme değişiklikleri de önemli ölçüde daha yüksek bulunmuştur. Çalışma sonucunda, artan mutluluk ve kaygı düzeylerinin beslenme değişiklikleri ile ilişkili olduğu gösterilmiştir ($p \leq 0,001$). Beslenmeden bağımsız olarak, uyku düzeni değişikliklerinin kaygı ve mutluluk seviyesinde artış olduğunu bildirenlerde daha fazla olduğu saptanmıştır ($p \leq 0,001$). Cinsiyetler arası farklılığa bakıldığı zaman kadınların erkeklere göre daha fazla uyku sorunu yaşadığı belirlenmiştir ($p=0,006$).

Sonuç: Halk sağlığından sorumlu kişiler, karantina gibi kriz süreçlerinin halk sağlığı üzerinde kısa ve/veya uzun vadeli sağlık sorunlarına yol açabileceğinin farkında olmalı, toplumsal ve bireysel farkındalığı artırmaya çalışmalıdır.

Anahtar Kelimeler: Beslenme, uyku değişikliği, kaygı ve mutluluk durumu

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Introduction

The definition of health is not limited to physical wellbeing or daily routines. It is also depicted by numerous environmental and social factors. Among the life changing conditions, the world has witnessed an unprecedented pandemic that rivalled the former ones. The coronavirus was reported in Wuhan in December 2019 and spread rapidly all over the world and was declared a pandemic in 2020 by the World Health Organization (1). It is also defined as a fatal respiratory tract infection transmitted from person to person by close contact or droplet (1,2). Symptoms of Coronavirus disease-2019 (COVID-19) include fever, cough, difficulty breathing, fatigue, changes in diet and sleep. In addition to these symptoms, gastrointestinal symptoms such as diarrhea, vomiting and abdominal pain are also observed. However, most importantly, the disease can progress asymptomatically in some people and the transmission continues (1-4). Epidemics and/or pandemics include processes that affect the world suddenly and unannounced. Isolation/ quarantine of patients and their contacts is essential for both protection and prevention of transmission in pandemics. Prevention methods include maintaining social distance, ensuring personal hygiene, and basic rules such as mask use, as well as controlling processes such as nutrition and sleep patterns and ensuring that the personal immune system is strong. Many countries have started the quarantine process by developing country policies to prevent contamination during the most common period of the virus (5). In Turkey and Northern Cyprus, a long-term partial and/or full quarantine process was initiated in March 2020 for the purpose of protection from the Coronavirus and prevention of its spread.

Sleep is not just a physiological cycle that takes place at a certain time of the day. It is a dynamic process that is affected by many parameters (nutrition, anxiety, happiness level, etc.) of daily life. The quarantine process leads to disruption of the life routine and, accordingly, to an increase in the levels of uncertainty, stress, boredom, health-related stress and anxiety. As a result, it can also affect sleep, which is a vital physiological, immunological and metabolic stabilizing factor, regardless of age. In addition, it can cause different sleep problems along with poor sleep quality (6). The quarantine process may increase the risk of nutritional disorders (increased intake of energy and macronutrients, decreased intake of micronutrients) as well as sleep problems (7,8). However, sleep problems (insomnia, etc.), which are among the obesogenic factors, can lead to nutritional disorders such as increased food intake (9). At the same time, the stress that occurs in this process increases the consumption of comfort foods and the risk of obesity development. Obesity has also been linked to increase the risk of low-grade inflammation and complications of COVID-19. These changes in the diet negatively affect the immune system and increase the risk of infection (8). For this reason, nutrition has been accepted as a public health priority in this period to strengthen the immune system and protect against the virus (5). Despite this importance, there are limited publications emphasizing the sleep and nutritional changes that occur in pandemics (5,10-12). In this context, it is considered necessary to examine the primary factors of sleep pattern, anxiety and happiness parameters, which are closely related to nutrition and nutritional changes under the coronavirus pandemic.

In this study, it is aimed to evaluate the effect of the COVID-19 pandemic, and the partial/full quarantine process applied to reduce the risk of transmission, on dietary and sleep pattern changes. In addition, the relationship between nutritional and sleep pattern changes, anxiety level and happiness status were evaluated. On the public side, it was also designed to raise awareness about the relationship of important factors such as anxiety and happiness in optimal nutrition and sleep processes, which are documented to have a significant impact on public health.

Materials and Methods

General design and participants

This study, which was carried out during the COVID-19 pandemic and quarantine period, was applied online in order to reduce the risk of transmission and to keep the coronavirus protection strategies at the highest level. In this study, which was applied with the online questionnaire technique, it was aimed to collect information about the diet change, sleep pattern change, anxiety level and happiness status during the quarantine process and to evaluate the relationship with each other. It took about 15 minutes to fill out the questionnaire.

We selected a convenience sample of people older than 18 years old, speaking Turkish in Cyprus and Turkey and the questionnaire was applied to these participants adhering to the principles of voluntariness and confidentiality. Those participants who did not complete the questionnaire were excluded from the study. Accordingly, the first 900 complete responders were taken into the study group. Respondents did not receive any reward and/or money for taking part in the research. The study was conducted in accordance with the Declaration of Helsinki and ethics committee approval was obtained for the research protocol (YDU/2020/78-1059).

Research tools

The information of the research was collected between May 2020 and June 2020 through the questionnaire prepared with the "Google Forms" web survey software program. Besides the survey being distributed through the social media (Facebook, Instagram and Twitter), it was also shared with personal social contacts of the researchers. Participants provided information about general properties such as gender, age, occupation during the quarantine process with the socio-demographic information form. The answers regarding the nutritional and sleep pattern changes of the participants were obtained with close ended questions directed by the self-assessment method. The questions were, ''have you had sleep problem in quarantine process?'', ''If you had a sleeping problem, please define the problem or problems'', ''Did you have a nutritional problem in quarantine process?'', ''If you had a nutritional problem please define this problem or problems''. These questions probed whether people experienced changes in nutrition and sleep

patterns during the quarantine period, and if they did, to what level this change was extended. Participants who reported that there were changes in their nutritional and sleeping patterns were able to choose more than one option while stating the reasons for the change in their nutritional status, and also reported the reasons other than the options. The participants were asked a close question to indicate how they felt (anxiety and happiness status) during the quarantine status, to which they responded on a Likert-type question from bad to great good for happiness status. With the five-point Likert type question method, the questions were evaluated individually and no general inferences were made depending on the average values. These questions were, "where do you feel on your happiness line today?" and "where do you feel on your anxiety line today". In return for these questions, one of the answers listed from bad to great was expected to be given. It has been supported with images for the question to be understood clearly.

Statistical Analysis

Statistical Package for the Social Sciences (SPSS) version 21.0 was used for the statistical evaluation of the research data. Descriptive statistics were used to determine the characteristics of the sample. For this purpose, frequency and percentage values and mean values were determined for categorical data. Statistical evaluation of the difference between groups was defined by Fisher's chi-square test. For all statistical tests, the "p" value <0.05 was considered to show a statistically significant difference.

Results

Out of the 900 participants who answered the questionnaire, 64.7% were females and 35.3% males. The majority of the participants (46.3%) were between 20 and 35 years of age. Following this age range, 22.6% of the participants were 36-50 years, 13.3% were 51-65 years, 13.3% were <20 years, and 2.1% were >65 years of age. When the occupational profile of the participants was examined, 34.6% were students, 21.9% were private sector employees, 12.0% were civil servants and 11.8% were health workers. Different from these professions, there were academics (9.8%), retirees (5.2%), housewives (2.8%), tradesmen (1.4%) and unemployed (0.6%). Among the individuals included in the study, the rate of COVID-19 diagnosis was 0.8% (n=7).

The nutritional changes of the individuals participating in the study was questioned during the COVID-19 quarantine process. As a result, while the rate of those who experienced a change in their nutritional change during the COVID-19 quarantine period was 45.9%, the rate of those who reported that they did not experience any change was found to be 54.1%. When the distribution of the changes in the dietary of the participants by gender was examined, it was determined that females experienced more changes in the diet than males ($p \leq 0.001$). It was reported that 34.1% of female individuals and 11.8% of males experienced changes in their nutritional status, so the study found that females experienced more changes than males (Figure 1A). When the reasons for the changes in the nutritional status of the participants were examined, respectively, increase in appetite (30.6%), deterioration in meal order (28.0%), increase in night snacks (21.6%), decrease in appetite (8.6%), increase in consumption of healthy foods (8.1%), and increase in the consumption of foods (sugar, etc.) with high energy content (0.7%) were found. At the same time, 13.5% of the participants reported that they experienced both an increase in their appetite, a deterioration in their meal patterns, and an increase in night snacks.

During the COVID-19 quarantine period, sleep pattern changes, anxiety level and happiness status were evaluated among the other factors thought to be related with nutritional changes. When the participants' "happiness" status was evaluated during the quarantine period, 48.1% stated that there was no change in their happiness status. Following this rate, 29.9% of the participants classified their happiness as good, 9.0% as very good, 10.6% as bad and 2.4% as very bad. In this process, the anxiety levels of the participants were classified as normal by 53.6%, high or very high by 26.7% (respectively 21.7%, 0.5%), and lower or very lower by 19.7% (respectively 14.4%, 5.3%). When the anxiety levels and happiness status of the participants were examined, it was found that the anxiety levels of females were significantly higher than males ($p \leq 0.001$) and females were less happy than males ($p=0.011$). When the distribution of the changes in the nutritional status of the participants by gender was examined, it was documented in this study that females experienced more dietary changes than males ($p \leq 0.001$). At the same time, both happiness and anxiety levels increased in those who experienced changes in their nutrition ($p \leq 0.001$) (Table 1). As stated in Table 1, this study showed that people who experience changes in their sleep patterns experience more changes in their nutritional status (Figure 1B). The rate of those who experienced changes in both sleeping and nutritional patterns was 33.6%. However, the rate of those who experienced a change in their sleeping pattern but did not experience a change in their nutritional status was 15.7%. While 9.2% of those with very bad or bad happiness status stated that they experienced a change in their nutritional status, 3.8% stated that they did not. Similarly, the rate of those who did not have dietary changes was found to be higher in those who stated that their happiness level was good or very good ($p \leq 0.001$). Of the people who stated that their happiness level was normal, 23.7% reported that they had nutritional changes during the quarantine period, while 24.4% reported that they did not. The rate of people who anxiety level was above the normal (18.3%) as well as dietary changes. In addition, the rate of those whose anxiety level was above normal and who did not experience dietary problems was 8.4%. Those who reported their anxiety level as normal were 21.1% and 32.4%, respectively. The rate of those who did not have dietary changes was found to be higher in participants with lower and very lower anxiety levels. This rate was 13.2%, and the rate of those who had nutritional problems is documented as 6.5%.

The main factor that is thought to affect dietary changes during the COVID-19 quarantine process is sleep pattern

change. The relationship of this factor with other secondary factors (gender, anxiety level, and happiness status) was examined. As a result, it was determined that female participants experienced more sleep problems than males during the COVID-19 quarantine period (p=0.006) (Figure 1C). At the same time, sleep pattern changes were observed more frequently in the participants who stated that their anxiety level was higher and those who stated that their happiness level was better (p≤0.001) (Table 2). Table 2 explains that the rate of sleep pattern changes in females is higher than in males. This rate is 34.0% and 15.2%, respectively. According to the findings of our study, the most common sleep change among the causes of sleep pattern changes was determined as a decrease in sleep

Table 1. Evaluation of the factors that are thought to be associated with nutritional status in the individuals participating in the study

		Dietary changes		Total	
		Yes	No		
Sleep pattern changes	**Yes**	33.6%	15.7%	49.2%	**p≤0.001**
	No	12.3%	38.4%	50.8%	
Total		**45.9%**	**54.1%**	**100.0%**	
Happiness status	**Very bad**	1.4%	1.0%	2.4%	**p≤0.001**
	Bad	7.8%	2.8%	10.6%	
	Normal	23.7%	24.4%	48.1%	
	Good	10.3%	19.6%	29.9%	
	Very good	2.7%	6.3%	9.0%	
Total		**45.9%**	**54.1%**	**100.0%**	
Anxiety level	**Very high**	3.6%	1.4%	5.0%	**p≤0.001**
	High	14.7%	7.0%	21.7%	
	Normal	21.1%	32.4%	53.6%	
	Lower	5.1%	9.3%	14.4%	
	Very lower	1.4%	3.9%	5.3%	
Total		**45.9%**	**54.1%**	**100.0%**	

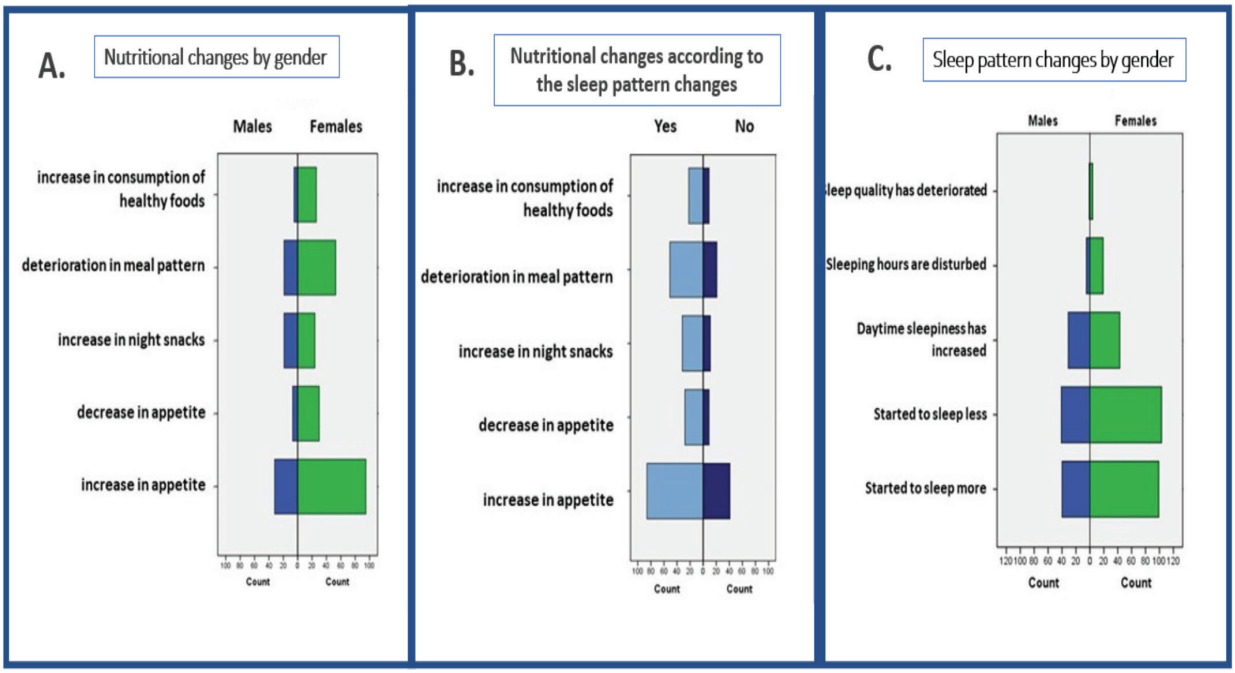

Figure 1. Distribution of participants' responses for nutritional changes by gender (1A), nutritional changes according to sleep patterns (1B) and sleep pattern changes by gender (1C) during the COVID-19 quarantine period

COVID-19: Coronavirus disease-2019

duration. The incidence of this change is 40.9%. This was followed by an increase in sleep duration (30.2%), increase in daytime sleepiness (22.8%), irregularity in sleep hours (4.7%) and deterioration in sleep quality (1.4%). When the distribution of changes in sleep patterns according to gender was examined, it was observed that increase in daytime sleepiness, increase in sleep duration and decrease in sleep duration were common causes in both genders. It was determined that the causes of deterioration in sleep quality and sleep hours were significantly higher in females than males. The rate of participants who both got sleep pattern changes and reported bad (and very bad) happiness status was 10.4%. At the same time, 2.5% of participants stated that they did not experience sleep problems. Similarly, the rate of those who did not have sleep problems was found to be higher in those who stated that their level of happiness was good or very good ($p \leq 0.001$). On the other hand, 24.9% of people who reported that their happiness status was normal reported that they experienced changes in their sleep patterns during the quarantine period. In addition, 23.2% of the participants notified that there was no change in their sleep patterns. When the effect of anxiety level on sleep problems is examined, 18.0% of those with high and very high anxiety level reported that they had sleep problems and 8.7% did not. In people who classify their anxiety level as lower or very lower, these rates are 7.2% and 12.6%, respectively.

Figure 2 depicts the general behavioural changes in conjunction with gender. The female subjects underwent a bigger change (i.e deterioration) due to the pandemic in majority of behavioral dimensions. The happiness somehow remained to be similar in both genders. Hence, the anxiety, diet and sleep appear as largely interwoven factors.

Discussion

In our study, it was determined that the pandemic dynamics, in which individuals experience changes in their nutritional status, is affected both by the quarantine process and by factors such

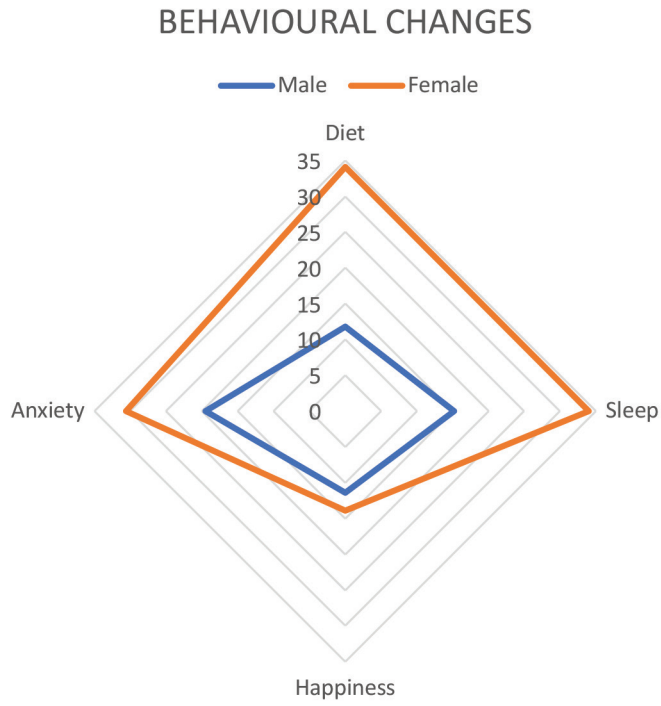

Figure 2. The radar graph of major behavioural changes for both genders. The common axis denotes the degree of change as percentage. The blue line depicts the males and red line depicts the female subjects

Table 2. Evaluation of factors affecting sleep pattern change during the COVID-19 quarantine process

		Sleep pattern change			
		Yes	No	Total	p
Gender	**Female**	15.2%	20.1%	35.3%	**p=0.006**
	Male	34.0%	30.7%	64.7%	
Total		**49.2%**	**50.8%**	**100.0%**	
Happiness status	**Very bad**	2.0%	0.4%	2.4%	**p≤0.001**
	Bad	8.4%	2.1%	10.6%	
	Normal	24.9%	23.2%	48.1%	
	Good	10.1%	19.8%	29.9%	
	Very good	3.8%	5.2%	9.0%	
Total		**49.2%**	**50.8%**	**100.0%**	
Anxiety level	**Very high**	4.2%	0.8%	5.0%	**p≤0.001**
	High	13.8%	7.9%	21.7%	
	Normal	24.0%	29.6%	53.6%	
	Lower	5.4%	9.0%	14.4%	
	Very lower	1.8%	3.6%	5.3%	
Total		**49.2%**	**50.8%**	**100.0%**	

COVID-19: Coronavirus disease-2019

as sleep patterns, anxiety levels, and happiness status. At the same time, these factors also interact within themselves. It was determined that the level of anxiety and status of happiness caused a change in sleep patterns and this change increased the change in nutrition patterns. Globally daily life routines, as well as physical and mental health, have been affected by the COVID-19 pandemic and quarantine period (13,14). Many reasons that developed in this process, such as the wide social impact of COVID-19, the stress and tension of home life, have caused individuals to change their nutritional status and sleep patterns. Sleep is an important part of human life, especially for the physical, mental and immune system. Thus, studies have reported that sleep is one of the most important protective factors that keep the physical and mental state of individuals healthy during the pandemic (15).

Individuals participating in our study defined that the quarantine process caused changes in their nutritional status, and the results showed that this process mostly affected female individuals. The most common change in nutritional status or dietary habits was determined as an increase in appetite. When other studies are reviewed, it has been shown that the COVID-19 pandemic and the quarantine period due to the pandemic can have both harmful and beneficial effects on lifestyle changes and eating habits of individuals. The increase in consumption frequency and amount due to the increase in appetite can be given as an example of its harmful effects. On the other hand, it is emphasized that there may be an increase in the consumption of healthy foods together with the decrease in the rate of eating out. Emotional eating behavior is thought to increase the risk of future eating behavior disorders. Giacalone et al. (16) found changes in nutritional habits such as meal consumption times, number of daily meals and frequency of snacks during the quarantine period in their studies. Among the reasons for this change in eating habits, spending more time at home, boredom and spending more time for cooking are shown. In another study, it was shown that changes in working status and stress negatively affect eating habits. At the same time, another finding that is similar to our study is that poor sleep quality adversely affects emotional state and this has a negative effect on eating habits (17). Reyes-Olavarría et al. (18) and Cheikh Ismail et al. (19) determined in their studies that the participants continued their pre-quarantine habits, but there was an increase in the amount of consumption. In another study, 42% of the participants reported an increase in the amount of food consumed, while 13% reported a decrease in their consumption (7). Pellegrini et al. (20), in their study, found the rate of those who reported that there was no change in their food preferences and consumption amounts compared to pre-quarantine as 32.4%. The rate of those who have the same food preferences but increase or decrease in their consumption amounts is 18.3% and 9.6%, respectively (20). At the same time, the rate of those who changed both their food preferences and consumption amounts (increase 14.4%, decrease 9.9%) is 15.4%. In conclusion, this study showed that the quarantine process led to an increase in food consumption (12). In addition, it was determined that the quarantine process caused an increase in the consumption of unhealthy foods and this increase was a significant increase compared to the pre-quarantine period (20). In another study, similar results were obtained and the rate of healthy eating was 20.7% and the rate of unhealthy eating was 35.6% (21). Despite these studies, there are studies reporting that the quarantine process does not change the nutritional status or eating habits (22) and that the quarantine process improves the quality of the diet (34% of the participants) (5,7). In a study in Turkey, it was found that the quarantine process increased the rate of healthy eating habits by 18.8% and decreased the rate of unhealthy eating habits by 3.2% (4). It was stated that the rate of healthy food preferences cooked at home increased during the quarantine compared to the pre-quarantine period (5,19,21). This increase has had a significant positive effect on both the quality and quantity of food preferences compared to the pre-quarantine (5).

In our study, more changes in nutritional status were found in those who experienced changes in their sleep patterns compared to those who did not. This increase in dietary change was also found to be statistically significant. Macit (3) has documented an increase in sleep times during the COVID-19 quarantine, and this increase also leads to an increase in food intake. This study has similar results with our study. At the same time, it has been shown that the COVID-19 quarantine process causes an increase in the amount of skipping meals and the amount of food consumption between meals. In the study of Castro et al. (9), they were shown that the change in sleep duration had an effect on the number of meals and nutritional quality. It has been reported that individuals with short sleep duration are more insufficient nutrition and short sleep duration is associated with an increase in the consumption of snacks with low nutritional content. In the study, it has been shown that 23% of the total energy intake is met from snacks in individuals who sleep less than six hours. It has been reported that individuals with long sleep duration skip one of the three main meals (9). In another study, it was shown that an increase in sleep duration was associated with a decrease in total daily energy intake (23). As a result of the evaluation of the happiness and anxiety levels of the individuals included in the study, they reported that the increased happiness and anxiety levels during the quarantine period caused an increase in both sleep and nutritional problems. In some studies investigating the relationship between anxiety and food intake during the quarantine period, it has been found that quarantine increases the level of anxiety/stress, which increases the intake of foods with high sugar content, consumption of fast food and pastries (24) and decreases the amount of fish and legumes consumption (25). These studies reported that changing food preferences negatively affect diet quality (24,25). In a study, it was reported that the level of anxiety was higher in people who had night eating attacks, irregular eating behavior, and were classified as overweight and obese, during the quarantine period (26). Yılmaz and Eskici (27) investigated the effects of stress/anxiety and happiness status caused by the pandemic process on food intake in Turkey. According to the results of the study, they found the rate of those who had a higher appetite after the

pandemic than before the pandemic (27). Kaya et al. (28), on the other hand, reported that increased stress causes changes in diet and changes in food preferences. Studies have shown that increased anxiety during quarantine is a high risk factor for eating disorders in the adolescent group (29). Regardless of age groups, Yılmaz and Eskici (27) investigated whether there was a difference between the genders in their study. According to the results, it was determined that the elevated stress score would affect the amount of food consumed in both females and males (27). When the results of our study are evaluated with other studies in the literature, it is seen that they are similar to each other and it is clearly seen that increased stress/anxiety in this process affects food intake and food preferences independent of factors such as age and gender. This relationship between the quarantine process and nutritional problems is a sign that it will negatively affect diet quality after the pandemic.

In this study, most of the participants described that they experienced sleep disorders during the quarantine and that the most common sleep problem they experienced was "decrease in sleep times" followed by "increase in sleep times". In addition, the quarantine process affected women more, and in addition, it was determined that women had more sleep problems than men. Some studies have obtained similar results and have shown that the quarantine process as a result of the COVID-19 pandemic causes sleep disorders and a decrease in sleep quality (30-32). The reason for sleep quality disorders and sleep problems is the inability to go out and decrease in exercise level (30), stress, loneliness (33), sensitivity, shift work, COVID-19 symptoms, negative effects of the quarantine process on quality of life (32), presence of chronic diseases and spending more time on the internet (34). Similar results were obtained in the study of Li et al. (35), and it was determined that sleep problems were observed at a rate of 55.8% during the quarantine period. The reasons for these problems are the increasing concern about the COVID-19 pandemic, the effect of the quarantine process on social interaction, and attempts to improve academic/professional development (35). In their study, Pinto et al. (10) reported the presence of at least one of the sleep problems of the participants, such as difficulty falling asleep and waking up frequently during sleep. Cellini et al. (36) determined that the participants sleep patterns were disrupted (going to bed later, waking up later) and spending more time in bed with lower quality sleep. They reported that the reason for this was the change in sleep patterns and the use of electronic devices. The researchers also showed that participants with higher levels of depression, anxiety, and stress experienced more sleep problems (36). Li et al. (37) documented that the quarantine process caused a significant increase in sleep problems. In their study, they observed a significant increase in the time spent in bed and total sleep time, as well as delayed bedtime and wake-up time (37). In another study, similar results were obtained, and according to these results, it was reported that later bedtime, delayed sleep onset, decrease in nighttime sleep duration, increase in daytime sleepiness, and worsening of sleep quality of individuals (38). Bağcı et al. (4), in their study in Turkey, found a decrease in sleep quality in 33.6% of individuals and an improvement in sleep quality in 38.6% of individuals during quarantine. They did not find any difference between the genders (4). Similar to our study, there are also studies showing that the quarantine process affects females more than males (6,34,39). Higher level of anxiety and higher education level have been shown as the causes of more sleep problems in women (39). Despite these studies, there are also studies reporting that some people experience no change during COVID-19 and even experience improvement in sleep quality, as their daily schedules have become more flexible (32,40). When the results of our study are evaluated with other studies in the literature, it is seen that they are similar to each other. In this process, gender differences were observed in increasing sleep problems. It is thought that the reason for this may be the increase in the domestic workload of women, the excess of time spent at home, and the main role in ensuring domestic order with work.

In our study, the participants reported that 26.7% of them had higher or very higher anxiety levels, and 19.7% of them had lower or very lower anxiety levels. At the same time, it was determined in this study that 49.2% of them had sleep problems and female individuals had more sleep problems than male individuals. In a meta-analysis study, Deng et al. (41) found the prevalence of depression, anxiety, and sleep disorders to be 45%, 47%, and 34%, respectively, during the quarantine period. Although there are no gender differences in anxiety and sleep disorders in some studies (41), there are also studies showing that female individuals have a higher risk of sleep disorders and anxiety (39,42). Studies have shown that increased anxiety and decreased happiness during the quarantine period have a negative effect on sleep quality (43). In their study, Casagrande et al. (31) reported that being afraid of a diagnosis with COVID-19 and being in contact with people with a positive diagnosis of COVID-19 increase the level of stress/anxiety and the risk of sleep disorders. As a result of their study, Al-Ajlouni et al. (44) showed that 60% of the participants had sleep problems and more importantly, anxiety was associated with poor sleep health. In this study, it was reported that participants with severe anxiety had impaired sleep quality, shortened sleep duration and at least one sleep disorder problem (44). When the results of our study are evaluated major behavioral changes such as increased stress/anxiety, sleep disorders and dietary deterioration were noted, but female individuals are more affected by this shift. The reason for this maybe thought to be related to the fact that social isolation and further domestic workload increased anxiety in female individuals.

Conclusion

The findings obtained in this study showed that crisis processes such as the COVID-19 pandemic, which affect the whole society, and the quarantine process applied to manage this process, significantly altered the anxiety levels, happiness levels, and nutrition and sleep processes, which are the basic vital processes of personal wellbeing. Our findings revealed that the quarantine process increased nutritional problems

and that these problems were also accompanied by increased sleep disorders and increased anxiety and happiness levels. At the same time, it was determined by this study that the sleep patterns of the participants were also sensitive to factors such as anxiety and happiness. Persons responsible for public health should be aware that crisis processes such as pandemics and the full/partial quarantine applied during these processes may cause short and/or long-term health problems on public health and should try to increase social and individual awareness.

Ethics

Ethics Committee Approval: This research was approved by the Ethics Committee of the Faculty of Medicine, Near East University (YDU/2020/78-1059) and was conducted according to principles of the Declaration of Helsinki.
Informed Consent: Informed consent was obtained.
Peer-review: Internally peer-reviewed.

Authorship Contributions

Concept: A.Ö., M.Ö., S.G.Z., Design: A.Ö., M.Ö., S.G.Z., Data Collection or Processing: A.Ö., M.Ö., S.G.Z., G.İ., Analysis or Interpretation: A.Ö., M.Ö., S.G.Z., G.İ., Literature Search: S.G.Z., G.İ., Writing: A.Ö., M.Ö., S.G.Z., G.İ.
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