

Evaluation of The Relationship Between COVID-19 Burnout and Hedonic Hunger in Adult Individuals

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ABSTRACT

Objective: The objective of this study is to investigate the evaluation of the relationship between COVID-19 burnout and craving for overeating (hedonic hunger) in adults.

Materials and Methods: Ethical approval was received from Akdeniz University Faculty of Medicine Clinical Research Ethics Committee (2021/KAKE-652) to conduct this study. The study included 346 adults between the ages of 18 and 64. Information on general characteristics of the subjects, changes in their body weight and dietary habits during the pandemic, physical activity levels, hedonic hunger, and COVID-19 burnout were collected through a web-based questionnaire.

Results: The majority of the study subjects were women (74.3%). The mean age, body weight, height, and body mass index of the individuals were 37.5 ± 10.84 years, 69.97 ± 16.27 kg, 167.1 ± 8.71 cm, and 24.96 ± 4.81 kg/m², respectively. It was determined that most of the subjects (81.2%) did not engage in an adequate level of physical activity during the pandemic. The power of food scale (PFS) mean score of the subjects was 2.76 ± 1.04 , and their coronavirus burnout scale (COVID-19-BS) mean score was 29.02 ± 10.7 . More than half of them (59.8%) had hedonic hunger, and their COVID-19-BS score was significantly higher than those without such condition (25.4 ± 9.90) ($p < 0.01$). In addition, a moderate positive correlation was present between the COVID-19-BS scores of the subjects and their PFS scores ($r = 0.354$, $p < 0.01$). The mean COVID-19-BS score of subjects with inadequate physical activity (29.7 ± 10.52) was significantly higher than those with adequate physical activity (26.1 ± 10.85) ($p = 0.014$).

Conclusion: It is believed that the subjects should be informed in detail about coping with the feeling of burnout, the importance of physical activity, and healthy nutrition during the pandemic.

Keywords: Burnout, COVID-19, eating behavior, pandemic

Yetişkin Bireylerde Covid-19 Tükenmişliğinin Hedonik Açlık ile İlişkisinin Değerlendirilmesi

ÖZET

Amaç: Bu çalışmada yetişkin bireylerde COVID-19 tükenmişliğinin aşırı yeme isteğiyle (hedonik açlık) ile olan ilişkisinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Çalışmanın yapılabilmesi için etik kurul onayı Akdeniz Üniversitesi Tıp Fakültesi Klinik Araştırmalar Etik Kurulu'ndan (2021/KAKE-652) alınmıştır. Çalışmaya 18-64 yaş arası 346 yetişkin birey dahil edilmiştir. Bireylerin genel özellikleri, pandemi dönemindeki vücut ağırlığı ile beslenme alışkanlıkları değişimleri, fiziksel aktivite düzeyleri, hedonik açlık ve COVID-19 tükenmişliği ile ilgili bilgiler web tabanlı anket formu aracılığıyla toplanmıştır.

Bulgular: Çalışmaya katılan bireylerin çoğunluğunu kadınlar (%74,3) oluşturmaktadır. Bireylerin yaş, vücut ağırlığı, boy uzunluğu ve beden kütle indeksi ortalamaları sırasıyla $37,5 \pm 10,84$ yıl, $69,97 \pm 16,27$ kg, $167,1 \pm 8,71$ cm ve $24,96 \pm 4,81$ kg/m²'dir. Pandemi döneminde bireylerin çoğunluğunun (%81,2) fiziksel aktivite durumunun yetersiz olduğu görülmüştür. Bireylerin besin gücü ölçeği (BGÖ) skor ortalaması $2,76 \pm 1,04$ ve koronavirus tükenmişlik ölçeği (KTÖ) skoru $29,02 \pm 10,7$ olarak bulunmuştur. Bireylerin yarıdan fazlasında (%59,8) hedonik açlığının olduğu ve hedonik açlığı olan bireylerin KTÖ ($31,4 \pm 10,51$) puanının normal olan bireylere göre ($25,4 \pm 9,90$) anlamlı düzeyde daha yüksek olduğu saptanmıştır ($p < 0,01$). Ayrıca bireylerin KTÖ puanları ile BGÖ puanları arasında ise orta düzeyde pozitif ilişki tespit edilmiştir ($r = 0,354$, $p < 0,01$). Fiziksel aktivitesi yetersiz olan bireylerin KTÖ puanı ($29,7 \pm 10,52$) ortalamasının fiziksel aktivitesi yeterli derecede aktif olanlardan ($26,1 \pm 10,85$) anlamlı olarak daha yüksek olduğu görülmüştür ($p = 0,014$).

Sonuç: Pandemi sürecinde bireylere tükenmişlik duygusu ile başa çıkma, aktivitenin önemi ve sağlıklı beslenme konusunda daha fazla bilgilendirme yapılmasının gerektiği düşünülmektedir.

Anahtar Kelimeler: Tükenmişlik, COVID-19, yeme davranışı, pandemi

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Uncommon and unexpected acute events with a global effect can cause mood changes in behavioral, cognitive, and emotional abilities such as attention, memory, using information, helping others, social relations, extraversion, and performance (1). The COVID-19 pandemic measures have not only physiological but also psychological effects as they trigger emotions such as disruption of routine life, feeling of uncertainty, fear of being infected, thinking that you live in an unsafe area as well as the feelings of stress, fear, disappointment, and burnout (2). Burnout is defined in the literature as “the draining of physical resources, which leads to psychological exhaustion of the person”. In other words, it is a state of physical, emotional, and mental exhaustion resulting from prolonged exposure to emotionally challenging situations. It is thought that the COVID-19 pandemic has turned into an increasingly widespread burnout picture in the society (3, 4).

Today, food is abundant and readily available, which leads to eating not only for metabolic hunger (homeostatic hunger) but also for pleasure (5, 6). Regardless of the energy content, the desire to consume food for motivation is called “hedonic eating”. The urge to hedonic eating leads individuals to consume food even though their body does not need it. In most people, stress can result in changes in appetite, causing hedonic hunger, unlike homeostatic hunger, and an increase in food consumption (5).

Based on the hypothesis that the feeling of burnout caused by the COVID-19 pandemic in individuals may have an impact on eating behaviors, the aim of this study is to determine the relationship between COVID-19 burnout and the desire to overeat in adults aged 18-64 years.

MATERIAL AND METHODS

Study Population and Design

This cross-sectional study was conducted with adults aged 18-64 between August 2021 and September 2021 to determine their hedonic hunger and COVID-19 burnout status during the pandemic. In the study, the convenience sampling method was adopted, which is frequently used in online surveys and becoming increasingly widespread. It was aimed that the study sample consisted of at least 271 adults with a 10% margin of error from the sample

size of an unknown population (7). 362 people filled out the questionnaire created in the electronic environment, and after 16 with missing data in the survey were excluded, 346 individuals formed the sample of the study.

Data Collection

The general characteristics of the subjects, changes in their body weight and dietary habits during the pandemic, their physical activity levels, hedonic hunger, and COVID-19 burnout statuses were collected electronically via the “Google Survey”. Their hedonic hunger (craving to overeat) was evaluated on the Power of Food Scale (PFS) and their COVID-19 burnout on the Coronavirus Burnout Scale (COVID-19-BS). Their body mass indexes (BMI) were calculated and evaluated using the body weight (kg)/height² (m²) formula based on the self-reported body weight and height values.

Instruments

The COVID-19 Burnout Scale, which is used to determine the burnout status of individuals, is adapted from the Burnout Criterion-Short Version (8) and is a 5-point Likert-style scale consisting of 10 items. The score obtained from the scale will be between 10 and 50, indicating that the higher the score, the more severe the COVID-19-related burnout (9). The “Power of Food Scale” developed by Cappelleri et al. (10) is a 5-point Likert-style scale scored from 1 (strongly disagree) to 5 (strongly agree) used to evaluate the effect of living in environments with plenty of delicious foods on individuals’ psychological status and hedonic hunger. The original scale had 21 items; however, this number was reduced to 15 following the validity and reliability analysis. The scale has three sub-factors that measure responses to food situations: food availability, food present, and food tasted. The score that can be obtained from the scale ranges from 1 to 5, and a score of ≥ 2.5 indicates that the individual is more sensitive to the food environment and is psychologically controlled by food, that is, the presence of hedonic hunger (10).

A short physical activity form, which includes questions about the weekly frequency of vigorous and moderate physical activities, was used to define the physical activity levels of individuals. Those who scored 4 and above in the

questionnaire were evaluated as “adequately active”, and those who scored 0-3 as “inadequately active” (11).

Data Analysis

The study data were evaluated in the SPSS 25.0 Statistics packaged software. Qualitative variables (categorical variables) were given in numbers (n) and percentages (%). Continuous variables (quantitative variables) obtained by measurement were shown in mean values and standard deviation. The conformity of the quantitative variables to normal distribution was assessed in the “Kolmogorov-Smirnov” test, and the Independent-t Test was used to compare the variables distributed normally. The relationship between the total scores of the COVID-19-BS and the PFS was defined in the Pearson correlation test. In all statistical analyses, the level of significance was accepted as $p < 0.05$.

RESULTS

The demographic characteristics of the study subjects are shown in Table 1. The study was conducted on 346 people most of whom were women (74.3%). The subjects were aged from 18 to 65, with a mean age of 37.5 ± 10.84 years. The mean values of their body weight, height, and body mass index were 69.97 ± 16.27 kg, 167.1 ± 8.71 cm, and 24.96 ± 4.81 kg/m², respectively.

The changes in their dietary habits, body weight, and appetite during the COVID-19 period are shown in Table 2. 43.6% of them reported that their eating habits changed negatively during the pandemic, 45.7% stated that their appetite increased, and nearly half of them (47.1%) gained weight. Before COVID-19, 54.0% of the subjects had three main meals and 41.9% had two snacks a day. However, the percentage of the former decreased to 50.6% and that of the latter to 38.4% after COVID-19. 32.4% of the subjects reported that they had two snacks while 31.8% had one snack before COVID-19. Nevertheless, after COVID-19, 35% of them started to have two snacks, and those who had three snacks (20.2%), and there was also an decrease in the number of those who had one snack (19.49%) (Data not shown in the table).

The data on the hedonic hunger, coronavirus burnout, and physical activity status of the subjects during the pandemic are summarized in Table 3. In the pandemic, most of them (81.2%) did not engage in an adequate level of physical activity. The mean PFS score of the subjects was 2.76 ± 1.04 , and the COVID-19-BS score was 29.02 ± 10.7 . The mean PFS total score and all sub-dimension scores were ≥ 2.5 points. Evaluation of the subjects’ hedonic hunger status revealed that more than half of them (59.8%) had hedonic hunger.

When hedonic hunger status and the mean score of COVID-19-BS were evaluated, it was observed that subjects with hedonic hunger had a significantly higher COVID-19-BS (31.4 ± 10.51) score than those without (25.4 ± 9.90) ($p < 0.01$) (Table 4). In addition, a moderate, positive relationship was present between the COVID-19-BS scores of the subjects and their PFS scores ($r = 0.354$, $p < 0.01$) (Figure 1). Furthermore, evaluation of the physical activity status and the mean score of COVID-19-BS indicated that the mean score of COVID-19-BS (29.7 ± 10.52) of the subjects with inadequate physical activity levels was significantly higher compared to those with adequate physical activity levels (26.1 ± 10.85) ($p = 0.014$) (Table 4).

DISCUSSION

This study aimed to investigate the relationship between the feeling of burnout due to the COVID-19 pandemic and hedonic hunger and reveal the link between the former and the desire to overeat.

During the pandemic, studies have been conducted to evaluate burnout and depression, primarily focusing on the fear of COVID-19 in healthcare professionals (12-14). However, there are not enough studies analyzing the effect of COVID-19 on burnout in individuals in the general public who are not healthcare professionals. In addition, the literature provides no national or international studies that reveal the relationship between burnout and nutrition due to the negative psychological and emotional effects of the pandemic. The results of this study show that pandemic-related burnout triggers hedonic hunger, which is the consumption of food even though the body does not need it.

Table 1: Distribution of Demographic Characteristics

		Min-Max (Median)	X±SD
Age (years)		18-65 (38)	37.53±10.84
Body weight (kg)		41-138 (68)	69.97±16.27
Height (cm)		149-190 (166)	167.05±8.71
BMI (kg/m ²)		14.88-48.47 (24.29)	24.96±4.81
		n	%
Gender	Female	257	74.3
	Male	89	25.7
Educational Level	Elementary school	2	0.6
	High school	31	9.0
	University	221	63.9
	Master's degree	92	26.5
Marital Status	Married	235	67.9
	Single	111	32.1
Working status	Working	247	71.4
	Not working	99	28.6

Table 2: Changes in Their Dietary Habits, Body Weight, and Appetite During the COVID-19 Period

		n	%
Changes in dietary habits	Positive changed	57	16.5
	Negative changed	151	46.6
	Not changed	138	39.9
Changes in appetite	Increased	158	45.7
	Decreased	33	9.5
	Not changed	155	44.8
Changes in body weight	Increased	163	47.1
	Decreased	49	14.2
	Not changed	134	38.7

Table 3: Hedonic hunger, coronavirus burnout, and physical activity status of the subjects during COVID-19 pandemic

		X±SD	
Power of Food Scale Total Score		2.76±1.04	
Food available		2.53±1.09	
Food present		2.96±1.19	
Food tasted		2.88±1.09	
COVID-19 Burnout Scale Score		29.02±10.66	
		n	%
Power of Food Scale Score Evaluation	Normal	139	40.2
	Hedonic Hunger	207	59.8
Physical activity status of individuals during the COVID-19 period	Sufficiently active	65	18.8
	Insufficient active	281	81.2

Table 4: COVID-19 Burnout Scale Scores According to Individuals' Hedonic Hunger and Physical Activity Status

Power of Food Scale Score Evaluation	COVID-19 Burnout Scale Score (X±SD)	p
Normal	31.4±10.51	<0.01*
Hedonic Hunger	25.4±9.90	
Physical Activity Status	COVID-19 Burnout Scale Score (X±SD)	p
Adequately Active	26.1±10.85	0.014*
Adequately Inactive	29.7±10.52	

*Independent t-test, p<0.05

Pandemics can have different psychological impacts on every part of society. Studies conducted on healthcare professionals who work hard, especially during the COVID-19 period, have shown that 30-60% of them experience burnout during this period (14, 15). This study suggested that the subjects had moderate COVID-19 burnout, although they were not healthcare professionals (COVID-19-BS score 29.02 ± 10.7). The challenges brought by the COVID-19 pandemic have had unfavorable psychological effects, becoming a significant source of stress for both individuals and society. The pandemic continues to affect society negatively (16). As the pandemic affects our psychology, we may experience differences and changes in our emotional states. Our feelings that change during this period are mainly stress and anxiety. Studies show that many individuals experience increased anxiety and stress levels during the pandemic (17, 18). Emotional state influences what foods we consume, and the act of eating in times of stress and anxiety has developed as a common reflex. Therefore, it is well known that an increase in our anxiety and stress levels also affects our eating habits (19). In the literature, individuals reported that they consume food to satisfy their emotional hunger rather than physical (homeostatic) hunger during anxious and stressful times (20, 21). It is suggested that especially when we are sad, stressed, and anxious, food consumption increases as it is seen as an important psychological support in coping with these emotions (22, 23). 43.6% of the study subjects stated that their eating habits changed negatively during the COVID-19 period, while 45.7% reported an increase in their appetite. In addition, more than half of the subjects (59.8%) had hedonic hunger. Hedonic hunger is associated with an increase in appetite due to the taste, smell, and other sensory properties of food and the pleasure in consuming it (24). It can be deduced that the increase in appetite experienced by the majority of study subjects during the COVID-19 period is also due to hedonic hunger. Nowadays, it is suggested that the frequent and excessive consumption of delicious foods due to hedonic hunger causes non-communicable diseases, especially obesity (25). The mean body mass index of the subjects in this study was in the typical range (24.96 ± 4.81 kg/m²); however, nearly half of them (47.1%) stated that their body weight increased during the pandemic. Hedonic hunger increases the risk of obesity in individuals by causing an increase in appetite, thus in food intake, and eventually in body weight. It is thought that this may become more severe during the pandemic as the pandemic-related burnout may trigger hedonic hunger. This study suggests that COVID-19-related burnout is positively associated with hedonic hunger (Figure 1). Moreover, the burnout

scale score of the subjects with pandemic-related hedonic hunger (31.4 ± 10.51) is significantly higher than those without it (25.4 ± 9.90) (Table 4).

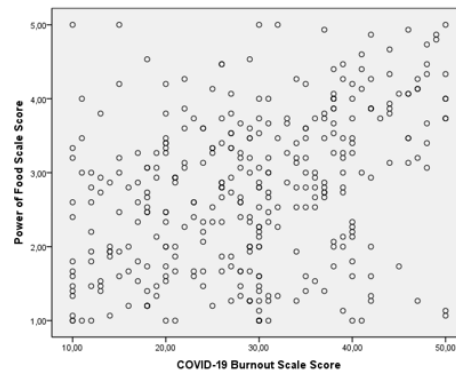


Figure 1: The Relationship between the Coronavirus Burnout Scale Score and the Power of Food Scale Score

The pandemic has made social isolation mandatory and limited the physical activity means of the general public (26). This study also showed that the majority of individuals (81.2%) had inadequate physical activity levels. However, contrary to the data of this study, it is reported that many have started to engage in physical activities to strengthen their immune system, improve their mental health, and reduce the unfavorable psychological effects of the measures applied during the pandemic (27). In addition, studies show that there is a negative relationship between physical activity and burnout and that regular physical activity reduces the feeling of burnout (28-30). The results of this study are in line with the literature. The mean COVID-19-BS score of those with inadequate physical activity levels (29.7 ± 10.52) is significantly higher than those with adequate physical activity levels (26.1 ± 10.85) (Table 4). Nevertheless, in Turkey, the general public has not yet reached the desired physical activity level. Therefore, it should be underlined that regular physical activity during the pandemic is critical for protection from COVID-19 and avoiding the feeling of burnout, which is among its psychological effects.

CONCLUSION

Many factors such as the prolongation of the pandemic period, unemployment, restrictions, and economic difficulties cause a decrease in physical activity and an increase in stress levels in individuals. Moreover, the inability to cope with stress can lead to an upswing in the feeling of burnout and overeating. This study has revealed that as coronavirus burnout intensifies, hedonic hunger becomes more frequent, and physical activity level decreases.

As such, individuals should be informed in detail about coping with the feeling of burnout, the importance of activity and healthy eating during the pandemic process.

DECLARATIONS

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Conflicts of interest: None of the authors has any conflict of interest to declare.

Ethics approval: All procedures involving research study participants were approved by the Akdeniz University Faculty of Medicine Clinical Research Ethics Committee (2021/KA EK-652) and study permission (2021-08-25T14_02_52) from the T.R. Ministry of Health Scientific Research Platform.

Authors' contributions: Hülya Kamarlı Altun, Nilgün Sermet Kürklü and Merve Şeyda Karaçil Ermumcu contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

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