

Hedonic hunger status and related factors in adults

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Abstract

Purpose: The aim of this study is to determine factors affecting hedonic hunger in adults.

Design and methods: A cross-sectional research design was used to collect face-to-face data from 315 adults, aged 18–65 years, residing in Balıkesir/Turkey by way of a questionnaire.

Findings: Hedonic hunger was found to be higher in women and also rates decreased with age. As body mass index increased, so did hedonic hunger. Hedonic hunger was seen as higher in individuals who do not engage in regular physical activity, those who consume nighttime snacks, and persons who follow a weight loss diet. It has been determined that individuals with hedonic hunger have a high level of food craving, impulsiveness, and low self-esteem.

Practice implications: Controlling psychological factors such as impulsiveness and self-esteem can be effective in reducing hedonic hunger.

KEYWORDS

food craving, hedonic hunger, impulsiveness, self-esteem

1 | INTRODUCTION

In prehistoric times, the primary goal of foraging and feeding was energy homeostasis and hunger-avoiding survival. Hunger, nutrition, and food-seeking behaviors are the results of a complex process involving more than one motivational factor (Yang et al., 2015). Hunger and food intake are regulated by two different systems: homeostatic and hedonic hunger. Homeostatic hunger is the increase in the desire to eat, regardless of the type of food, to eliminate the negative energy balance that occurs after the depletion of energy stores. Hedonic hunger refers to an increase in appetite in the absence of metabolic needs, a result of the desire to eat despite unavailable foods, in relation to an expectation of pleasure from food (Aliasghari et al., 2019; Akçil Ok & Hayzaran 2020; Espel-Huynh et al., 2018). The line separating “homeostatic” and “hedonic” hunger is not clear, but there are two main differences. First, although the taste of food is associated with both types of hunger, it is much more important in defining hedonic hunger, that is, the primary reason why certain foods are desired and consumed. It is assumed to bring rewards based on

satisfying properties rather than merely energy content. Second, hedonic hunger appears only when there is a short-term energy deficit. In other cases, the motivation behind appetite behavior is partially or completely based on physiological energy requirements. Although even homeostatic hunger has a hedonic component, hedonic hunger differs from homeostatic hunger regarding the timing, quantity, and quality of the items consumed. With homeostatic hunger, individuals exhibit eating behavior even when energy is exhausted, while in the case of hedonic hunger, items are consumed depending on the satisfactory or rewarding properties of foods, independent of energy content (Lowe & Butryn, 2007). Today's modern environment is full of unlimited, cheap, extremely tasty, and energy-rich foods leading individuals to consume products not only for metabolic need but also to feel better, lower stress levels, experience pleasure, or quell excessive urges (Espel-Huynh et al., 2018). Enjoying a piece of cake after a hearty meal represents an arbitrary orientation towards food intake, not energy-deprivation needs (Lowe & Butryn, 2007). Although the body does not have a physiological need for hedonic-based food intake, the foods consumed are typically salty, sugary, and fatty

products with high calories (Lee & Dixon, 2017). A big change in energy intake and the presence of high-calorie foods in large portions can lead to the emergence of hedonic factors that stimulate food intake. In the long term, these foods lead to impaired weight balance, obesity, and an increase in chronic diseases associated with obesity (Lee & Dixon, 2017). The food environment also increases appetite-stimulating activities directed hedonically psychologically. Many factors such as physiological differences, eating habits, sensitivity to environmental nutritional cues, the perceived reward of foods, availability of foods, impulsivity with excessive cravings, and the self-esteem of individuals all affect hedonic hunger. For these reasons, it is crucial to establish a balanced relationship between today's modern, obesogenic lifestyle and food consumption (Köse & Sanlier 2015). In this study, the primary objective was to discover the relationship between a range of factors affecting hedonic hunger by determining the effects of psychological, behavioral, and cognitive factors such as impulsivity and self-esteem on food intake, evaluation of individuals' feelings and thoughts about food and nutrition without physiological need among environments where delicious and tempting foods are common.

2 | METHODS

2.1 | Participants

A total of 315 adults were included in the study between the ages of 18 and 65 years, all of who agreed on participation. Data were collected between the years 2018 and 2019 from individuals residing in the Balikesir province of Turkey. The primary goal of the study is to determine the factors affecting hedonic hunger in individuals. As such, PFS scores were determined to be dependent variables (outcome variable) and predictors/factors independent variable(s). The sample size for the multiple linear regression model was determined by taking FCQ, BIS-11, CSES, gender, age, and body mass index (BMI). To determine the smallest effect (0.08) from the model with a 5% error probability and 95% power, the minimum total number of adult individuals required to be accepted was calculated as 315. This study was conducted according to the guidelines of the Declaration of Helsinki, and Ethical Commission Approval number 94603339-604.01.02/40112, dated 07.11.2018 was obtained from the Ethics Commission.

2.2 | Demographics

A questionnaire with 35 inputs was used to determine the personal characteristics of subjects, using the method of observed self-completion.

2.3 | Anthropometric measurements

The BMI of individuals was calculated with the formula $BMI = \text{body weight (kg)}/\text{height (m}^2\text{)}$ using body weight and height values based on the declaration and World Health Organization (WHO) classification (WHO, 2010).

2.4 | Visual Analog Scale (VAS)

VAS was used to digitize some values that cannot be measured numerically (Müftüoğlu et al., 2017). In this study, individuals were asked to score some food types with VAS to determine which varieties they are most interested in.

2.5 | Power of Food Scale (PFS)

The PFS was developed to evaluate the effect of living in environments with large amounts of delicious foods on the psychological and hedonic hunger state of individuals. Although the original form consisted of 21 items, after the Turkish validity and reliability analysis, it was reduced to 15 items with three subfactors. The Turkish version of PFS was used in this study (Akcil Ok & Hayzaran, 2020) employing the following scale: PFS-1 = food available; PFS-2 = food present; PFS-3 = food tasted (Lowe et al., 2009). Substances were collected under PFS-1 = 1, 2, 5, 10, 11, and 13; PFS-2 = 3, 4, 6, and 7; PFS-3 = 8, 9, 12, 14, and 15. Each item was scored from 1 to 5. In published studies, the evaluation of the PFS scale is made with 5 points, so the total score is calculated by dividing it into the number of items. High scores indicate that the individual is more sensitive to his/her food environment and is psychologically controlled by food. The cut-off point of the hedonic hunger score was understood as 2.5 points. The Cronbach's alpha of the scale was determined to be 0.85.

2.6 | Food Craving Questionnaire (FCQ)

The original questionnaire was the FCQ (Cepeda-Benito et al., 2000) and its Turkish validity and reliability study was conducted by Müftüoğlu et al. (2017). The scale is a 6-point Likert-type consisting of 9 subfactors and 39 items in total. The following rating system was used: FCQ-1 = the intention and plan to consume food; FCQ-2 = the expectation of positive support as a result of the meal; FCQ-3 = an expectation of relief from negative emotions and situations as a result of eating; FCQ-4 = a lack of overeating control; FCQ-5 = thoughts about food or preoccupation; FCQ-6 = physiologically excessive cravings; FCQ-7 = food cravings and emotions experienced during or before eating; FCQ-8 = stimuli that trigger excessive food cravings; FCQ-9 = guilt felt due to an inability to resist desires or wanting to eat. Each item was scored from 1 to 6. Higher scores

indicate that excessive food cravings have developed (Müftüoğlu et al., 2017).

2.7 | Barratt Impulsiveness Scale-11 (BIS-11)

The BIS-11 is a 4-point Likert-type scale consisting of 30 items used to evaluate impulsiveness (Stanford et al., 2009). Each item is scored from 1 to 4 and the scale has three subfactors. "Attention or cognitive impulsiveness," which is quick decision making; "motor impulsiveness," or acting without thinking; and on the contrary, "unplanned impulsiveness" refers to being focused on a moment or not thinking about the future (Sarisoy et al., 2013). In the evaluation of BIS-11, four different subfactor scores were obtained: total score, nonplanning, attention, and motor impulsiveness. Score keys suggested by Patton et al. (1995) are used in the evaluation of the scale with the higher the total BIS-11 score, the greater a patient's level of impulsiveness (Annagür et al., 2012). A Turkish validity and reliability study was conducted by Gülec et al. (2008).

2.8 | Coopersmith Self Esteem Scale (CSES)

The CSES is a 25-item scale developed by Stanley Coopersmith (1981) that can be utilized for a variety of age groups, especially adults. Individuals receive points for marking "Yes" for some items on the scale and "No" for others. Scored items award four points and the others are given zero points. The highest score that can be obtained is 100 and the lowest is 0. Higher scores indicate greater levels of self-esteem of the individuals. A Turkish validity and reliability study was carried out by Tufan and Turan (1987).

2.9 | Statistical analysis

The data were analyzed using SPSS 22.0 and a Pearson χ^2 test was used in the evaluation of category variables. The assumption of normal distribution was examined using a Kolmogorov–Smirnov test. The strength and direction of the relationship between two quantitative variables were investigated using a Pearson correlation analysis. Binary univariate logistic and binary multiple logistic regression analyses were applied by taking dependent and independent variables either alone or together. In all statistical analyses, the significance level was accepted as $p < 0.05$.

3 | RESULTS

Of the total participants in the study, 50.2% were women and 49.8% were men. The average age was 37.95 ± 12.30 years, the average BMI of women was 24.43 ± 5.21 kg/m² and men 25.43 ± 3.62 kg/m². In all, 54.3% of individuals consume three meals per day and 49.5% do not consume snacks. It was found that

TABLE 1 Gender, age, and BMI groups according to individuals' hedonic hunger status

	Hedonic hunger				χ^2 ^a	p
	Yes (n = 184)		No (n = 131)			
	N	%	N	%		
Gender						
Women	105	57.1	53	40.5	8.442	0.004*
Men	79	42.9	78	59.5		
Age groups						
18–27	55	29.9	24	18.3		
28–38	54	29.3	31	23.7	9.926	0.019*
39–48	40	21.7	38	29.0		
≥49	35	19.0	38	29.0		
BMI groups (kg/m ²)						
Low (<25)	97	52.7	77	58.8	1.137	0.286
High (≥25)	87	47.3	54	41.2		

* $p < 0.05$.

^aPearson's χ^2 test.

51.7% of women and 42.9% of men experience hedonic hunger, with the number of women more than men ($p < 0.05$). Hedonic hunger was also higher in individuals aged 18–27 and 28–38 than those aged 39–48 and ≥49 years old ($p < 0.05$). In all, 52.7% of individuals with a low BMI and 47.3% of individuals with a high BMI experience hedonic hunger, but a relationship between these BMI groups and hedonic hunger was not found statistically significant ($p > 0.05$; Table 1).

It was seen that 34.2% of individuals with hedonic hunger follow a weight-loss diet and that 36.5% of individuals with hedonic hunger follow a range of four or more diets, that is, individuals with hedonic hunger have more weight loss diets ($p < 0.05$). It was determined that 42.9% of individuals with hedonic hunger do not do regular physical activity. The difference in terms of physical activity level in individuals with and without hedonic hunger is statistically significant ($p < 0.05$; Table 2).

The correlation between PFS scores of individuals and the state of getting up at night and consuming snacks is given in Table 3.

It was observed that as PFS totals and subfactor scores increase, individuals wake up and consume snacks at night ($p = 0.000$). Although there is a positive relationship between the desire to consume junk foods such as chocolate foods, pastry products, chips, fast food, pastries, fried potatoes, and PFS scores ($p < 0.05$), there is a negative relationship with the desire to consume meat ($p > 0.05$; data not shown). The correlation between hedonic hunger and FCQ, BIS-11, and CSES scores is given in Table 4.

It was observed that hedonic hunger increased as FCQ total and subfactor scores increased ($p < 0.05$). In addition, as the BIS-11 total and subfactor scores increased, it was shown that hedonic hunger also increases ($p < 0.05$). It could also be noted that as the CSES total

TABLE 2 Weight loss diet application and physical activity status according to the hedonic hunger status

	Hedonic hunger				χ^2 *	p
	Yes (n = 184)		No (n = 131)			
	N	%	N	%		
Weight loss diet						
Apply	64	34.2	36	27.5	1.622	0.203
Not apply	121	65.8	95	72.5		
The number of weight loss diets applied (n = 100)						
Only once	17	27.0	17	45.9		
Twice	17	27.0	8	21.6		
Three times	6	9.5	7	18.9	8.718	0.033 ^a
Four/more times	23	36.5	5	13.5		
Totally	8	12.7	11	29.7		
Physical activity						
Not regular physical activity	79	42.9	63	48.1		
1 day/weekly	52	28.3	21	16.0		
2 day/weekly	20	10.9	15	11.5	10.525	0.032 ^a
3 day/weekly	21	11.4	13	9.9		
4 day and more/weekly	12	6.5	19	14.5		

^aPearson's χ^2 test.

*p < 0.05.

TABLE 3 Correlation between night snack consumption and PFS scores

	Eating snacks at night	
	r ^a	p
PFS-1	0.204	<0.001
PFS-2	0.253	<0.001
PFS-3	0.204	<0.001
PFS total	0.253	<0.001

^aPearson's correlation coefficient.

score increased, hedonic hunger increased positively but the relationship between them was not statistically significant ($r = 0.060$, $p > 0.05$). Univariate binary logistic regression analysis estimation results are given in Table 5.

When the effect of age and gender is included in the model, it was observed that BMI is positively associated with hedonic hunger ($\beta = 0.04$), with each 1 kg/m² increase causing an 8% (odds ratio (OR) = 1.08) increase in the rate of hedonic hunger ($p = 0.014$). When those who experience physical activity 4 days a week are taken as a reference, the rate of hedonic hunger in those who do not do regular

TABLE 4 Correlation between PFS and FCQ, BIS-11, and CSES scores

	Hedonic hunger (PFS score)	
	r ^a	p
FCQ-1	0.610	<0.001
FCQ-2	0.525	<0.001
FCQ-3	0.535	<0.001
FCQ-4	0.582	<0.001
FCQ-5	0.565	<0.001
FCQ-6	0.579	<0.001
FCQ-7	0.542	<0.001
FCQ-8	0.551	<0.001
FCQ-9	0.285	<0.001
FCQ-Total	0.649	<0.001
BIS-11-1	0.206	<0.001
BIS-11-2	0.151	0.007*
BIS-11-3	0.121	0.032*
BIS-11 Total	0.196	<0.001
CSES Total	0.060	0.291

^aPearson's correlation coefficient.

*p < 0.05

physical activity is 2.1 times compared to those who do ($p = 0.033$). Additionally, those who exercise 1 day per week are 4.31 times ($p = 0.02$) more likely and those who do 3 days a week 2.78 times more ($p = 0.044$). The rate of hedonic hunger is 2.02 times higher in those who have the habit of snacking at night compared to those who do not, and this result shows that there is a positive relationship between the snacking habit and hedonic hunger ($p = 0.001$). Although there was a positive correlation between the number of snacks and hedonic hunger ($\beta = 0.04$; OR = 1.04), it was not statistically significant ($p = 0.71$). The number of weight-loss diets undertaken by individuals also positively and statistically significantly affected hedonic hunger ($\beta = 0.45$; $p = 0.016$). There was also a positive correlation ($\beta = 0.03$) between FCQ total scores and hedonic hunger. When FCQ scores increased by one point, there was a 2% increase in the hedonic hunger rate (OR = 1.02; $p < 0.001$). It was concluded that all FCQ subfactors were positively associated with the rate of hedonic hunger ($p < 0.001$). Moreover, a statistically nonsignificant positive correlation was found between the BIS-11 total score and the rate of hedonic hunger ($\beta = 0.02$; $p = 0.207$). All three subfactors of impulsiveness were found to be positively associated with the hedonic hunger rate ($p > 0.05$). As CSES score increased, the rate of hedonic hunger also increased positively but it was not statistically significant ($\beta = 0.01$; $p = 0.765$). In Table 6, an estimation of multivariate binary logistic regression analysis results is given.

When the effects of all other variables in the model are included, there is a positive ($\beta = 0.03$) relationship between BMI and hedonic

TABLE 5 Results of univariate binary logistic regression analysis of factors affecting hedonic hunger^a

	95% confidence interval of OR					p
	β	S.H (β)	OR ^b	Min	Max	
BMI	0.08	0.03	1.08	1.02	1.15	0.014*
Physical activity						
Not regular activity	0.74	0.43	2.10	1.01	4.87	0.033*
1 day/weekly	1.46	0.52	4.31	1.72	10.76	0.002*
2 day/weekly	0.77	0.53	2.16	0.78	5.98	0.141
3 day/weekly	1.02	0.53	2.78	1.01	7.84	0.044*
4 day and more/weekly	Reference					
Eating snacks at night						
No	Reference					
Yes	0.71	0.21	2.02	1.4	3.04	0.001*
Number of snacks	0.04	0.13	1.04	0.81	1.36	0.761
The number of weight loss diets applied	0.45	0.19	1.58	1.09	2.28	0.016*
FCQ-1	0.32	0.05	1.38	1.25	1.51	<0.001
FCQ-2	0.13	0.03	1.14	1.09	1.19	<0.001
FCQ-3	0.24	0.04	1.27	1.17	1.37	<0.001
FCQ-4	0.15	0.03	1.16	1.10	1.21	<0.001
FCQ-5	0.12	0.02	1.13	1.08	1.18	<0.001
FCQ-6	0.24	0.04	1.27	1.18	1.36	<0.001
FCQ-7	0.17	0.03	1.19	1.15	1.26	<0.001
FCQ-8	0.18	0.03	1.19	1.12	1.27	<0.001
FCQ-9	0.09	0.03	1.09	1.03	1.17	<0.001
FCQ Total	0.03	0.01	1.03	1.02	1.04	<0.001
BIS-11-1	0.06	0.03	1.06	0.99	1.13	0.090
BIS-11-2	0.01	0.03	1.01	0.96	1.06	0.717
BIS-11-3	0.03	0.02	1.03	0.98	1.08	0.277
BIS-11 total	0.02	0.01	1.02	0.99	1.04	0.207
CSES total	0.01	0.03	1.01	0.94	1.09	0.765

Note: Bold data entries are those lesser than 0.05 (<0.05).

^aLogistic regression parameter estimates are given by adjusting for age and gender.

^bOR = exp(β): odds ratio; S.H(β): standard error estimation of β .

* $p < 0.05$.

hunger ($p = 0.661$). Likewise, when the effects of other variables in the model are included, a positive relationship can be seen between the number of weight loss diets individuals followed and the rate of hedonic hunger ($\beta = 0.43$; $p = 0.032$). The rate of hedonic hunger is

TABLE 6 Results of multivariate binary logistic regression analysis of factors affecting hedonic hunger^a

	95% confidence interval of OR					p
	β	S.H (β)	OR ^b	Min	Max	
BMI	0.03	0.07	1.03	0.90	1.18	0.661
The number of weight loss diets applied	0.43	0.25	1.53	1.03	2.51	0.032*
Eating snacks at night						
No	Reference					
Yes	0.73	0.51	2.07	1.76	5.61	0.041*
Physical activity						
Not regular physical activity	0.29	0.55	1.33	0.45	3.96	0.606
Once a week or more	Reference					
FCQ Total	0.03	0.01	1.03	1.011	1.05	0.002*
BIS-11 Total	-0.03	0.031	0.98	0.92	1.04	0.467
CSES Total	0.01	0.09	1.00	0.84	1.19	0.992

Note: Bold data entries are those lesser than 0.05 (<0.05).

^aIn the logistic regression model, age and gender were also included in the model along with all independent variables.

^bOR = exp(β): odds ratio; S.H(β): standard error estimation of β .

* $p < 0.05$.

2.02 times higher in those who do not have the habit of consuming snacks at night and that positive effect is statistically significant ($p = 0.041$). Hedonic hunger was found to be 1.33 times more likely for those who did not do regular physical activity than those who did once a week or more, but was not statistically significant ($p = 0.606$). It was concluded that the FCQ total score affected hedonic hunger positively and statistically significantly when the effects of other variables were included ($\beta = 0.03$; $p = 0.002$). Impulsiveness scores differed according to the result found in one variable. Although a positive correlation was noted with the hedonic hunger rate in the model that only included age, gender, and impulsiveness, a negative ($\beta = -0.03$) and nonstatistically significant relationship was found between impulsiveness and the hedonic hunger rate in the multivariate model where other factors were added ($p = 0.467$). A positive but not statistically significant relationship was found between self-esteem and the hedonic hunger rate ($\beta = 0.01$; $p = 0.992$).

4 | DISCUSSION

In this study, PFS scores were statistically significantly higher in women, which may indicate that the hedonic effect of foods is higher for them. In a study examining individual differences in sensitivity to food cues and daily snack consumption, it was found that women's PFS

scores were higher, but not statistically significant (Schüz et al., 2015). In another study of 820 Iranian adults, hedonic hunger was found to be higher in women than in men, suggesting that women are more prone to hedonic hunger (Aliasghari et al., 2020). Sex hormones such as estradiol, which affect eating behavior, differ by sex in terms of homeostatic control, although higher levels of estradiol in women lead to prolonged satiety, women's increased susceptibility to environmental food cues is associated with higher hedonic hunger levels (Gregersen et al., 2011). Hedonic hunger has also been found to decrease gradually as the age gets older, which could be related to the finding that there is a decrease in sense of taste with aging; individuals in the 20–30 age group are more sensitive than those in the 30–40 age group when the taste perception of individuals is evaluated (Köse & Sanlier 2015). Accordingly, it can be said that hedonic hunger will decrease with advancing age due to a decrease in the sense of taste. Although the number of individuals with a low BMI without hedonic hunger was higher, the number of individuals with hedonic hunger was higher in individuals with a high BMI. BMI is therefore positively correlated with hedonic hunger; an increase in BMI of 1 kg/m² resulted in an 8% increase in hedonic hunger. The relationship between hedonic hunger and BMI was evaluated in a sample of 1266 Portuguese individuals and a positive correlation was found between increasing PFS scores and BMI (Ribeiro et al., 2018). Similarly, it was stated that individuals in the obese range of BMI have higher PFS scores (hedonic hunger) (Ely et al., 2015; Rabiei et al., 2019; Yeh et al., 2016). Individuals experiencing hedonic hunger tend to follow a weight-loss diet. Mead et al. (2021) found that the increase in weight control behaviors in individuals was associated with a decrease in PFS scores. These results are consistent with the results of previous studies, which reported that individuals who are constantly on a diet have a higher tendency to consume delicious foods compared to individuals who do not diet (Meule et al., 2012; Stroebe et al., 2013). Intense exercise has been reported to stimulate reward and addiction-related areas in the brain. Accordingly, the change in hedonic response to nutrients with exercise emphasizes the importance of exercise in weight control (Finlayson et al., 2009). Hedonic hunger varied according to physical activity in our study; it was found to be 1.33 times higher in individuals who do not do regular physical activity compared to others. In a study conducted with university students, a negative relationship was found between weekly physical activity levels and hedonic hunger (Akcil Ok & Hayzaran 2020). In another study, it was determined that low physical activity levels increase the tendency to consume foods with high reward values (Beaulieu et al., 2020). In this study, the positive relationship between the desire to consume junk foods like chocolate products, cream cake, and pastry products, chips, fast food, french fries, breads, pasta, pastries, and ice cream and PFS scores indicates that these foods increase the hedonic effect on individuals. Similarly, studies have found that foods such as chocolate, pastry products, bread, sweets, and fast food have high hedonic effects (Horwath et al., 2020; Johnson et al., 2014). A positive relationship was determined between nighttime snacking and hedonic hunger. A population-based study found that individuals with high hedonic hunger had higher snack consumption and this was associated with

higher BMI (Schüz et al. 2015). FCQ totals and subfactor scores are higher in individuals with hedonic hunger. Individuals with high food cravings appear to be more sensitive to nutritional cues and cravings with high carbohydrate and fat content appear to be more stimulating rather than nutritious foods (Bénard et al., 2019). Such foods increase hedonic hunger by acting on the reward pathway, so nutrient intake increases hedonically without need (Alonso-Alonso et al., 2015). Nowadays, the main reason for tending to extremely tasty and high-energy foods may be due to increased impulsiveness. The effect of increased impulsiveness on excessive food intake and body weight gain has shown that individuals with high impulsiveness cannot control their food intake (Bénard et al., 2019; Tunay, 2018). In this study, individuals with hedonic hunger had higher impulsiveness as shown by BIS-11. Morbidly obese patients had a higher nonplanning subfactor than healthy obese, suggesting that morbidly obese individuals have difficulty adhering to a regular, planned, and healthy diet. As a result of this lack of planning, individuals prefer small rewards, like sugary foods, to larger, delayed benefits like a healthy life (Sariso et al., 2013). The increased level of impulsiveness in individuals may be associated with difficulty in resisting the consumption of extremely tasty foods, which can contribute to increased hedonic hunger. The high BIS-11-2 scores of individuals with high hedonic hunger indicate that these individuals act without thinking and tend to consume food even when they are not physically hungry. Nasser et al. (2004) found a positive correlation between BIS-11-3 scores and binge eating, and between BIS-11-2 scores and the loss of control of food intake without physiological hunger in obese patients. Studies related to impulsiveness have generally been conducted on individuals with obesity, eating disorders, psychiatric disorders, and females. In another study, it was found that individuals who are sensitive to the availability of palatable foods but have high self-control have lower consumption of palatable foods and snacks that are low in nutrients compared to those with low self-control (Horwath et al., 2020). In short, low impulsiveness and high self-control appear to be factors that prevent weight gain in individuals with high hedonic hunger. Although it has been stated in the published literature that there is an inverse relationship between BMI and self-esteem, there are also studies showing that there is no such relationship. Most research has found that obese individuals have significantly lower self-esteem than nonobese and that it is unclear whether low self-esteem is a result or cause of obesity (Almenara et al., 2017; Hamurcu et al., 2015). In this study, it was seen that as CSES totals increased, hedonic hunger also increased. Based on all these findings, it can be stated that individuals with high hedonic hunger are generally obese and that the low self-esteem of obese individuals may be associated with hedonic hunger. Therefore, self-esteem is a major factor affecting the prevalence of hedonic hunger.

5 | CONCLUSIONS

Nutritional intake today is not only based on physiological requirements but also the presence of environmental nutritional cues. As we know, hedonic structures interact with homeostatic structures in the

control of body weight and as most of this interaction occurs without awareness, restriction becomes difficult in an environment where food is abundant and mechanisms for the treatment and/or prevention of obesity become complex. Although many people have experienced hedonic hunger, some individuals are much more sensitive to environmental food cues. It has been shown that individual differences such as gender, physical activity, nutritional habits, and food cravings may lead to changes in sensitivity. In this study, it was revealed for the first time that psychological factors such as impulsiveness and self-esteem, which are not seen in published reports, also affect motivation for food intake and hedonic hunger. An environment full of extremely delicious foods prepares the ground for the development of hedonic hunger with cultural norms that make these foods “psychologically accessible,” triggering an epidemic of obesity and placing obstacles in the application of body weight control and treatment. Determining the factors that lead to hedonic hunger will contribute to more accurate guidance in individual nutrition programs and to a better understanding of the signals of homeostatic and hedonic hunger, and will improve the nutritional habits of individuals and increase the success of preventing and treating obesity. In future studies, it is recommended to evaluate not only BMI but also body composition in a larger sample including overweight and obese individuals.

5.1 | Implications for psychiatric nursing practice

Hedonic hunger is a condition often overlooked as it is difficult to detect; however, individuals with hedonic hunger are at risk for obesity and obesity-related health problems. Those experiencing problems controlling body weight receive support from nutritionists for treatment, but the failure to screen for hedonic hunger and influencing factors reduces the success of weight loss programs. An accurate evaluation of psychological factors such as impulsivity, self-esteem, and food cravings experienced by individuals in society by health professionals in primary healthcare institutions will allow hedonic hunger to be detected early and be treated before chronic nutritional diseases occur. With obesity becoming an epidemic around the world, healthcare professionals require a different perspective on the necessity of recognizing a situation such as hedonic hunger and related factors that directly affect obesity.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

ETHICS STATEMENT

The study was conducted according to the guidelines of the Declaration of Helsinki, and Ethical Commission Approval numbered 94603339- 604.01.02/40112 and dated 07.11.2018 was obtained from Baskent University Ethics Commission.

DATA AVAILABILITY STATEMENT

Research data are not shared. The data that support the findings of this study are available from the corresponding author upon reasonable request.

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