The Relationship of Mental Health Continuum with Hedonic Hunger and Dietary Habits in Adults*

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Abstract

Purpose: Research on mental health emphasizes that psychological state has an effect on eating behavior. These studies suggest that there may be a relationship between mental health continuum and hedonic hunger. This study aimed to examine the relationship between adults' mental health continuity and hedonic hunger.

Method: Participants were 387 adults (65 men and 322 women) without any mental illness. Data was collected by the researcher using the snowball sampling model, via Google Forms. A general questionnaire, food consumption frequency form, Mental Health Continuum Short-Form (MHC-SF) and Power of Food Scale (PFS) were administered.

Results: 56.1% of the participants were in normal mental health and 36.4% in well-being. MHC-SF total and sub-factor scores of the participants who did regular physical activity were significantly higher ($p<0.05$). The PFS total score was higher in women than men. There was a negative, weak, and statistically significant correlation between participants' MHC-SF and PFS total scores ($p<0.05$). There was a positive, weak and statistically significant correlation between Body Mass Index (BMI) and PFS total scores. There was a positive, weak and statistically significant correlation between PFS score, body weight and BMI. There was a statistically significant negative correlation between all PSF total and sub-factor scores and the frequency of fast-food and chips consumption ($p<0.05$).

Conclusion: Hedonic hunger increased as the mental health continuum decreased. It was determined that the continuity of mental health was higher in individuals who do regular physical activity and in men. As hedonic hunger increased, the frequency of consumption of chips and fast-food products increased.

Keywords: Hedonic hunger, mental health, obesity, eating behavior.

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ETHICAL STATEMENT: The protocol was approved by the Ethics Committee of the Istanbul Okan University, Türkiye. (number: 144/14, date: 10.11.2021). Participants provided written informed consent. The study was conducted following the 1964 Declaration of Helsinki.

Yetişkinlerde Ruh Sağlığı Sürekliliğinin Hedonik Açlık ve Beslenme Alışkanlıkları ile İlişkisi

Öz

Amaç: Ruh sağlığı üzerine yapılan araştırmalar psikolojik durumun yeme davranışı üzerinde etkisi olduğunu vurgulamaktadır. Bu çalışmalar, ruh sağlığı sürekliliği ile hedonik açlık arasında bir ilişki olabileceğini düşündürmektedir. Bu çalışma, yetişkinlerin ruh sağlığı sürekliliği ile hedonik açlık arasındaki ilişkiyi incelemeyi amaçlamıştır.

Yöntem: Çalışma, herhangi bir psikolojik hastalığı olmayan 387 yetişkin (65 erkek ve 322 kadın) birey ile tamamlanmıştır. Veriler araştırmacı tarafından kartopu örnekleme modeli kullanılarak Google Formlar aracılığıyla toplanmıştır. Genel anket, besin tüketim sıklık formu, Ruh Sağlığı Sürekliliği Kısa Formu (RSS-KF) ve Besin Gücü Ölçeği (BGÖ) uygulanmıştır.

Bulgular: Katılımcıların %56,1'i normal ruh sağlığında ve %36,4'ü iyilik halindedir. Düzenli fiziksel aktivite yapan katılımcıların RSS-KF toplam ve alt faktör puanları anlamlı olarak daha yüksektir ($p<0,05$). BGÖ toplam puanı kadınlarda erkeklerden daha yüksektir. Katılımcıların RSS-KF ve BGÖ toplam puanları arasında negatif, zayıf ve istatistiksel olarak anlamlı bir ilişki vardır ($p<0,05$). Beden kütle indeksi (BKİ) ile BGÖ toplam puanları arasında pozitif, zayıf ve istatistiksel olarak anlamlı bir ilişki belirlenmiştir. BGÖ toplam skoru, vücut ağırlığı ve BKİ arasında pozitif, zayıf ve istatistiksel olarak anlamlı bir ilişki vardır. Tüm BGÖ toplam ve alt faktör puanları ile fast food ve cips tüketim sıklığı arasında istatistiksel olarak anlamlı bir negatif korelasyon saptanmıştır ($p<0,05$).

Sonuç: Araştırma sonuçlarına göre ruh sağlığı sürekliliği azaldıkça hedonik açlık artmaktadır. Düzenli fiziksel aktivite yapan bireylerde ve erkeklerde ruh sağlığı sürekliliğinin daha yüksek olduğu belirlendi. Hedonik açlık arttıkça cips ve fast-food ürünlerinin tüketim sıklığı da artmaktadır.

Anahtar Sözcükler: Hedonik açlık, ruh sağlığı, obezite, yeme davranışı.

Introduction

People perform eating behaviors not only to meet the physiological need for energy but also to satisfy the sense of pleasure by consuming delicious foods[1]. Hedonic hunger is defined as the desire to satisfy feelings of pleasure with the consumption of delicious foods apart from hunger for the energy that individuals need physiologically[2]. Stimuli affect individuals' food consumption preferences in their daily lives. Individuals' rewarding experiences and stress-induced mood changes are referred to as internal stimuli[3,4]. Nutrition and mental health are also interrelated. Individuals' nutrition can affect their mental state. However, a person's mental state can also affect nutrition[5]. Mental health is defined as the absence of psychological problems such as anxiety and depression; however, these psychological disorders constitute only a part of the results that develop from individuals' experiences[6]. At this point, the concept of the mental health continuum comes into play[7]. Mental health is defined as a state of well-being[8]. Well-being can be defined as a very intense way of living a social and individual life if the individual is healthy with

his/her soul, body, and mind[9]. Changes in emotional states, such as anger, anxiety, and unhappiness, cause an increase in eating behaviors with hedonic effects, even if individuals do not feel hungry. This situation is generally explained as a defense mechanism exhibited by individuals to eliminate their current mental state[10]. The food preferences of individuals with hedonic eating tendencies are generally foods that make them happy and adapt to their tastes. Even when there is no need for energy, individuals consume food only for pleasure, and the energy content of these consumed foods is high[11]. Considering the physical and emotional pleasure that occurs in individuals after food intake, this mechanism is inevitable[12]. However, psychological changes in eating behavior affect both food choice and the total amount of food consumed, leading to an increase in some eating disorders, obesity, and obesity-related diseases[13,14]. In light of this information, instantaneous mood changes in individuals cause hedonic eating behavior; however, the relationship between a person's general mental health status (mental health continuum) and hedonic hunger has not been clearly explained in the literature. This study aims to determine the relationship between mental health continuum and hedonic hunger.

Material and Methods

This cross-sectional descriptive study was conducted between November 2021 and February 2022, using Google Forms web survey platform. To ensure the homogeneity of the participants, a snowball sampling method was chosen, and the individuals reached via WhatsApp and Instagram were asked to share the questionnaire with different people. The universe of the research was determined as adults in Turkey. According to the calculations, the lower limit for the number of samples was determined to be 385 with a regular distribution for the 95% confidence interval. The study was completed with 387 participants (65 men and 322 women). The research was conducted with adult individuals between the ages of 19-65 who voluntarily agreed to participate. Exclusion criteria were determined as having a psychological illness, use of antipsychotic medication, diagnosis of type 1 DM, type 2 DM, and insulin resistance.

Prepared by the researchers in accordance with the purpose of the research and in line with the relevant literature, a questionnaire including questions about socio-demographic, health, and nutritional habit information, food consumption frequency form, Mental Health Continuum Short-Form (MHC-SF), and Power of Food Scale (PFS) were administered. Anthropometric measurements (height (cm) and weight (kg)) were obtained by recording the self-reports of the participants in the questionnaire. BMI (kg/m^2) was calculated by the researchers. The World Health Organization (WHO) BMI classification was used for the evaluation of BMI[15].

The protocol was approved by the Ethics Committee of the İstanbul Okan University, Turkey (number: 144/14, date: 10.11.2021). Participants provided written informed consent. The study was conducted following the 1964 Declaration of Helsinki.

Mental Health Continuum Short-Form (MHC-SF): MHC-SF was developed by Keyes et al, and its Turkish adaptation and validity and reliability studies were performed by Demirci and Akın[16]. The scale consists of 14 items and three subscales. The sub-dimensions of the scale were emotional well-being 1,2,3; social well-being 4,5,6,7,8 and psychological well-being 9,10,11,12,13,14. The scale was arranged in a 6-point likert type format. The scoring system was applied as "Never (0)–Every day (5)". The range of points obtained from the applied scale varies between 0-70. The mental health continuum is measured by adding a score on the scale and 14 items on psychological, social, and emotional well-being. The high scores on each sub-dimension of the scale and the scores obtained indicate high well-being in that area. People who marked one of the three expressions in the emotional well-being dimension of the scale and six out of 11 expressions in the social and psychological well-being dimension as “Almost every day” or “Every day” were defined as flourishing. People who mark one of the three items in the Emotional Well-Being dimension and six out of eleven expressions in the Social and Psychological Well-being as “Never” or “Once or Twice” are defined as Unwell (Languishing). Those who fall outside of these statements are considered to have normal mental health.

Power of Food Scale (PFS): PFS was developed by Cappelleri et al.[17], and its Turkish validity and reliability study was performed by Hayzaran et al.[18]. Although PFS is not a measure of the food environment, it is a measure of individual differences in emotions, appetite-related thoughts, and motivations in environments where delicious foods are available, independent of daily food consumption[17]. The scale consists of 15 items. The scale was arranged in a 5-point likert type format. The questions ranged from (strongly disagree (1) to strongly agree (5)). PFS items were designed to reflect sensitivity to the environment in which the food was found, including proximity to food, in three sub-factors. The sub-factors were food available, food present, and food tasted. The PFS was evaluated over 5 points, and if the total score was higher than 2.5, the hedonic hunger levels of individuals increased, indicating that individuals were more sensitive to the food environment and were psychologically affected by food[17,18].

Statistical Analysis: SPSS 25.0 (Statistical Package for Social Sciences (SPSS) statistical package program was used for the statistical evaluation of the data. Normality analysis of the variables was performed using the Shapiro-Wilk test. In order to determine the relationship between continuous variables, “Pearson Product-Moment Correlation” analysis was used in the data set with normal distribution, while “Spearman Rank Differences Correlation” analysis was used in the absence of normal distribution. In order to determine the relationship between categorical variables and continuous variables, the "Dot Double Series Correlation" analysis method was applied. The “independent groups t-test was used to compare the mean differences between the measurement values of the two independent groups. To compare more than two independent means, the Kruskal–Wallis test was used when the distribution was not normal. The

Mann-Whitney U test was used to compare pairwise mean differences. Statistical significance was set at $p<0.05$, and 0.001 was considered significant.

Results

A total of 387 participants (322 women, 65 men) were included in this study. The mean age of the participants was 26.75±6.64 years. The mean age for women is 26.60±6.36 years and for men 27.48±7.87 years. According to the MHC-SF, 36.4% of the participants were in well-being, 56.1% had normal mental health and 7.5% were in a state of unwellness. There was no significant difference between the genders in terms of well-being ($p>0.05$).

The mean BMI for men was 25.53±3.83 kg/m², and 22.49±3.90 kg/m² for women. The mean emotional well-being score of the married participants was significantly higher than singles ($p<0.05$). The emotional, social, and psychological well-being mean scores and MHC-SF total score averages of those who performed regular physical activity were significantly higher than those who did not ($p<0.05$). The MHC-SF total scores and all sub-factor scores of individuals who rated themselves as normal were significantly higher than those who rated themselves as obese ($t_1=-3.715$, $t_2=-3.064$, $t_3=-3.245$, $t_4=-3.577$, $p<0.05$). The MHC-SF total scores and all sub-factor scores of individuals who rated themselves as overweight were significantly higher than those who rated themselves as obese ($t_1=-2.531$, $t_2=-2.304$, $t_3=-3.149$, $t_4=-2.969$, $p<0.05$) (Table 1).

Table 1. The relationship between MHC-SF sub-factors scores, total scores, and some variables

	Mental Health Continuum Short Form Sub-Factors											
	Emotional well-being (Factor 1)			**Social well-being (Factor 2)**			**Psychological well-being (Factor 3)**			**MHC-SF Total Score**		
Gender	**$\bar{X}$**	**SS**	**p**	**$\bar{X}$**	**SS**	**p**	**$\bar{X}$**	**SS**	**p**	**$\bar{X}$**	**SS**	**p**
Women	9.63	3.04	.999	12	5.38	.246	20.93	6.04	.887	42.56	12.62	.525
Men	9.63	3.11		13	6.46		21.05	6.27		43.68	14.41	
Marital Status												
Single	9.45	3.08	.015*	12.08	5.64	.539	20.71	6.03	.116	42.24	13.04	.115
Married	10.41	2.76		12.53	5.33		21.95	6.22		44.88	12.31	
Educational Status												
High school and below	9.67	3.32	.626	13.69	6.76	.146	22.50	6.41	.109	45.85	14.83	.139
Undergraduate	9.52	3.04		11.71	5.06		20.56	6.00		41.79	12.17	
Postgraduate and PhD	9.80	2.96		12.35	5.84		21.01	6.02		43.16	13.27	

Regular Physical Activity												
Yes	10.77	2.80	.000*	13.90	5.35	.000*	23.20	4.46	.000*	47.87	10.70	.000*
No	9.22	3.03		11.54	5.54		20.13	6.37		40.89	13.18	
Meal Skipping												
Yes	9.30	3.00	.005*	11.80	5.50	.092	20.49	6.03	.051	41.59	12.76	.021*
No	10.20	3.04		12.80	5.68		21.74	6.09		44.74	13.02	
Subjective assessment of current weight												
Underweight	9.08	3.11	.004*	11.04	5.84	.026*	21.54	5.17	.013*	41.67	12.54	.007*
Normal	9.99	2.97		12.71	5.13		21.22	6.03		43.93	12.52	
Overweight	9.50	3.18		12.19	5.93		21.53	5.73		43.22	12.78	
Obese	8.09	2.68		9.66	6.56		17.31	7.04		35.06	14.49	

*p<0.05 Independent Samples T Test (independent sample t test), Kruskal Wallis Test, Mann Whitney U Test ($\bar{X}$ = Mean, SD = Standard Deviation)

The mean PFS total score was 3.18±0.97 in men and 3.45±0.89 in women (p<0.05). The sub-factor score of the food tasted was 3.30±0.99 in males and 3.67±0.96 in females (p<0.01). The sub-factor averages of food tasted were 3.42 ± 0.96 for those who did regular physical activity and 3.67±0.97 for those who did not (p<0.05). The mean PFS total score was 3.13±0.91 for those who performed regular physical activity and 3.51±0.89 for those who did not (p<0.01).

While there was no statistically significant difference between the PFS sub-factors and total score averages and meal skipping status (p>0.05), the food tasted sub-factor score of individuals who skipped the breakfast and lunch was significantly higher than those who skipped dinner (p<0.01). The mean total score of PFS was 3.11±0.90 for individuals with slow eating speed; 3.37±0.87 for those with normal eating speed; those with fast eating speed were 3.57±0.94 (p<0.01). Individuals who snack between meals had significantly higher PFS total and sub-factor scores than those who did not snack (p<0.01). The difference between the PFS sub-factor and total score averages of those who evaluated their own weight as underweight, normal, overweight, or obese was statistically significant (p<0.05). In paired comparisons, the food available, food present sub-factors, and PFS total scores of individuals who perceived themselves as underweight were significantly lower than those who perceived themselves as obese (t_1=-3.380; t_2=-3.021; t_3=-2.819, p<0.01). The food available, food present, food tasted sub-factors, and PFS total scores of individuals who perceived themselves as normal were significantly lower than those of individuals who perceived themselves as obese (t_1=-4.571; t_2=-5.388; t_3=-4.102, p<0.01) (Table 2).

Table 2. The relationship between PFS sub-factors scores, total scores, and some variables

	Power of Food Scale Sub-Factors											
	Food Available (Factor 1)			**Food Present (Factor 2)**			**Food Tasted (Factor 3)**			**Power of Food Scale Total Score**		
Gender	**X**	**SS**	**p**	**X**	**SS**	**p**	**X**	**SS**	**p**	**X**	**SS**	**p**
Women	3.18	1.14	.249	3.45	1.05	.096	3.67	0.96	.006*	3.45	0.89	.029*
Men	3	1.12		3.21	1.19		3.30	0.99		3.18	0.97	
Marital Status												
Single	3.16	1.14	.731	3.39	1.07	.336	3.62	0.99	.615	3.41	0.93	.990
Married	3.11	1.12		3.52	1.12		3.55	0.88		3.41	0.84	
Educational Status												
High school and below	3.51	1.11	.007*	3.49	1.08	.378	3.68	1.09	.274	3.57	0.97	.075
Undergraduate	3.16	1.14		3.44	1.08		3.65	0.96		3.43	0.92	
Postgraduate and PhD	3.00	1.12		3.34	1.09		3.51	0.94		3.30	0.87	
Alcohol												
Using	3.14	1.13	.824	3.58	1.04	.020*	3.64	0.97	.578	3.47	0.90	.322
Not Using	3.16	1.15		3.32	1.09		3.58	0.97		3.37	0.92	
Regular Physical Activity												
Yes	2.83	1.12	.001*	3.07	1.16	.000*	3.42	0.96	.023*	3.13	0.91	.000*
No	3.27	1.12		3.54	1.03		3.67	0.97		3.51	0.89	
Meal Skipping												
Yes	3.13	1.13	.620	3.46	1.08	.235	3.56	0.98	.256	3.40	0.91	.824
No	3.19	1.15		3.33	1.09		3.68	0.96		3.41	0.91	
Eating Speed												
Slow	2.79	1.11	.006*	3.02	1.01	.002*	3.44	0.99	.198	3.11	0.90	.006*
Normal	3.10	1.10		3.36	1.06		3.58	0.93		3.37	0.87	
Fast	3.36	1.17		3.63	1.08		3.70	1.01		3.57	0.94	
Snack Between Meals												
Yes	3.34	1.11	.004*	3.59	1.06	.001*	3.74	0.95	.003*	3.57	0.88	.000*
Sometimes	2.99	1.12		3.28	1.04		3.52	0.97		3.29	0.89	

No	2.80	1.22		2.88	1.25		3.10	1.00		2.94	1.01	
Subjective Assessment of Current Weight												
Underweight	2.70	0.84	.000*	3.16	0.76	.000*	3.58	0.91	.104	3.18	0.75	.000*
Normal	2.90	1.11		3.13	1.07		3.50	0.98		3.20	0.90	
Overweight	3.52	1.15		3.77	0.99		3.77	0.91		3.69	0.86	
Obese	3.83	0.83		4.22	0.93		3.73	1.10		3.91	0.83	

*p<0.05 Independent Samples T Test (independent sample t test), Kruskal Wallis Test, Mann Whitney U Test

($\bar{X}$ = Mean, SD = Standard Deviation)

There was a negative, weak, and statistically significant relationship between the participants' MHC-SF scores and PFS total scores and sub-factors 1 and 2 (p<0.05). As the participants'

MHC-SF scores increased, the PFS total score and the scores for sub-factors 1 and 2 decreased (Table 3).

Table 3. Correlations between participants' MHC-SF total score and PFS total and sub-factor scores

Scales	**Mental Health Continuum (MHC-SF score)**	
	r	**p**
PFS total score	-.084*	.050
PFS Sub-factors		
Factor 1	-.109*	.016
Factor 2	-.105*	.019
Factor 3	-.008	.437

**p<0.01, *p<0.05 Pearson's R correlation test

The mean BMI of women was 22.49±3.90 kg/m², and men's was 25.53±3.83 kg/m². According to the WHO BMI classification, 8.5% of the participants were underweight, 65.9% were normal, 13.8% were overweight and 7.3% were obese. A positive, weak, and statistically significant relationship was between the PFS score, body weight, and BMI (p<0.01) (Table 4).

Table 4. Correlations between participants' MHC-SF, PFS scores, and body weight and BMI

Measurements	**MHC-SF Score**		**PFS Score**	
	r	**p**	**r**	**p**
Body weight (kg)	-.085	.096	.132**	.009
BMI(kg/m²)	-.053	.295	.205**	.000

**p<0.01, *p<0.05 Spearman Rho's test

As a result of the analysis carried out to determine the relationship between the MHC-SF and PFS scores of the participants and their consumption of energy, macro-and micronutrients, a negative, weak statistically significant relationship was found between PFS score and protein consumption rate, and a positive, weak statistically significant relationship was found between polyunsaturated fatty acid (PUFA) intake ($p<0.05$). As the PFS score of the participants increased, the PUFA value increased, whereas the percentage of energy from protein decreased. There was no statistically significant relationship between the MHC-SF scores of the participants and their consumption of energy or macro-and micronutrients ($p>0.05$).

Table 5. The relationship between the total scores and sub-factor scores of the participants' MHC-SF, PFS scales and the frequency of consumption of some foods

Scales	Food Consumption Frequencies											
	Bagel, pastry toast		Pastry		Cake		Cookies, biscuits		Chocolate		Milk dessert (pudding)	
	r	p	r	p	r	p	r	p	r	p	r	p
MHC-SF Total score	-.045	.373	.068	.180	.069	.173	.020	.694	-.082	.108	.083	.102
MHC-SF sub-factors												
Factor 1	-.085	.095	.051	.314	.050	.331	.004	.944	-.056	.269	.021	.678
Factor 2	-.049	.332	.077	.132	.067	.192	.039	.439	-.083	.105	.155**	.002
Factor 3	-.009	.864	.049	.334	.062	.225	.005	929	-.070	.170	.024	.633
PFS total score	.088	.085	.095	.063	.090	.076	.049	.341	.071	.161	.094	.064
PFS sub-factors												
Factor 1	.106*	.037	.100*	.048	.103*	.042	.020	.698	.080	.116	.105*	.039
Factor 2	.107*	.036	.105*	.039	.085	.094	.092	.070	.135**	.008	.110*	.031
Factor 3	019	.704	.042	.405	.048	.351	.018	.729	-.021	.679	.034	.508
Scales	**Food Consumption Frequencies**											
	Dessert with sorbet		**Chips**		**Sunflower seed**		**Fastfood (pizza, hamburger)**		**Carbonated drinks (cola,soda)**		**Alcoholic beverages**	
	r	p	r	p	r	p	r	p	r	p	r	p
MHC-SF total score	.060	.238	-.001	.987	-145**	.004	-.021	.677	-.006	.909	-.019	704
MHC-SF sub-factors												
Factor 1	-.042	.413	.013	.794	.085	.094	-.028	.583	-.015	.770	-.007	.892
Factor 2	.126*	.013	.030	.558	.196**	.000	.046	.368	.025	.622	-.055	.284
Factor 3	Factor3	.521	-.036	.482	.086	.092	-.073	.150	-.028	.582	.013	.806
PFS total score	.106*	.037	.219**	.000	.071	.164	.213**	.000	.125*	.014	.002	.965
PFS sub-factors												
Factor 1	.105*	.039	.218**	.000	.053	.294	.184**	.000	.097	.057	-.018	.726
Factor 2	.060	.236	.233**	.000	.088	.084	.202**	.000	.179**	.000	.056	.269
Factor 3	.106*	.036	.122*	.017	.044	.387	.165**	.001	.054	.287	-.028	.586

**p<0.01, *p<0.05 Pearson's R correlation test

When the relationship between the total scores and sub-factor scores of the MHC-SF, PFS scales, and the frequency of consumption of some foods that may be related to hedonic hunger was examined (Table 5), it was found that there was a positive and weakly significant relationship between the frequency of consumption of fast-food products and chips and all of the PFS total and sub-factor scores ($p<0.01$). A significant negative correlation was found between the frequency of sunflower seed consumption and total MHC-SF score ($p<0.05$).

Discussion

The WHO defines the concept of health not only as the absence of disease but also as a state of complete social, physical, and mental well-being. Looking at this definition, it has been seen that health is defined as multidimensional and focuses on the concept of well-being. Good mental health has been reported as a requirement for complete well-being[19]. The MHC concept of mental health continuum consists of the presence or absence of mental health. Mental health is defined as a state of well-being. Well-being includes the absence of negative emotions, a high level of well-being, and psychological and social functioning[8]. The vast majority of individuals participating in the study had normal mental health or well-being. There were no differences between men and women in terms of well-being, mental health, or well-being. In different studies conducted in our country in the same age group, it was determined that women experienced more mental problems than men[20-22].

Regular physical activity had a positive effect on mental health[23]. In this study, emotional, social, and psychological well-being mean scores and MHC-SF total score averages were found to be significantly higher for those who engaged in regular physical activity than for those who did not. Studies have reported that the mental states of individuals who do not have psychiatric problems and who exercise regularly are better than people who do not exercise[24-26]. In a different study conducted on healthy adults, a high level of negative correlation was found between physical activity and depression[27]. Increased psychological well-being has been associated with positive feelings about one's appearance[28].

In our study, when the relationship we examined between the participants' self-evaluation of their own bodies and their mental health continuities, it was determined that people who described themselves as normal had better mental health continuities than those who described themselves as obese. Various studies have linked psychological well-being with body image. Murray et al.[29] found that high levels of stress, depression, and low self-esteem (low psychological well-being) are significantly associated with body image dissatisfaction among high school students. For instance, Delfabro et al.[28]. Similar results were found in Australian secondary schoolchildren with body dissatisfaction and lower overall psychological health. Since the science of psychology was formed, it has focused on behaviors, such as anxiety and depression. Research on negative emotions in psychology has continued in a similar manner. Therefore, we did not find any studies focusing on the relationship between mental health

continuum and body image, or on psychological well-being. Therefore, this study contributes to the literature.

In this study, while all men and women exhibited hedonic hunger based on their PFS scores, it was determined that women had more hedonic hunger than men. Similarly, in the study conducted by Şarahman and Akçil[30], the hedonic hunger scores of women were found to be higher than men. However, there are also studies stating that there are no significant differences between the sexes in terms of hedonic hunger[31,32].

Nutrition is a highly influential factor in mental health. However, the relationship between diet and mental state remains unclear. Mental state can affect diet[33,34]. In one study, hedonic hunger and mental state were evaluated in college students at baseline and one year later. It has been observed that the level of hedonic hunger increases in the 1-year follow-up of students who initially had mental problems such as anxiety and obsessive disorder[35]. In our study, hedonic hunger increased as participants'mental health continuum decreased. In addition, nutrition can affect mental health. It is thought that especially the intake of tryptophan, omega-3 fatty acids, zinc, magnesium, and probiotics may affect mental health[36]. However, in our study, no significant relationship was found between mental health continuum and intake of any nutrient. It is also believed that the frequency of consumption of certain foods may be related to hedonic hunger. In this study, it was observed that the frequency of chips and fast food consumption increased as the PFS scores of the participants increased. Accordingly, hedonic hunger levels increase as polyunsaturated fatty acid (g) levels increase. In addition, an inverse relationship was found between the frequency of sunflower seed consumption and total MHC-SF scores. In other words, as the continuum of mental health decreases, the frequency of sunflower seed consumption increases. Oral stimuli provide pleasure. It is thought that thumb-sucking by the fetus in the womb and thumb-sucking in the postpartum period are basic and automatic solutions to mental problems. Eating is governed by psychological and physiological factors. People permanently stimulate their mouths by smoking, chewing gum, eating sunflower seeds, licking, sipping, or snacking. They do not out of hunger, but pamper the functioning of their mouths[37]. This information supports the negative relationship between sunflower seed consumption frequency and the MHC.

In our study, hedonic hunger increased as body weight and BMI increased. In a similar study, hedonic hunger was found to be higher in obese individuals than in those with normal weight[38]. In another study, hedonic hunger scores were higher in obese individuals[39]. These findings support our results, as well as the fact that hedonic hunger is a risk factor for obesity.

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Ethics Approval: Ethics committee approval number 144 and decision number 14 were obtained from the Istanbul Okan University Science, Social, and Non-Interventional Health Sciences Research Ethics Committee for the conduct of the study. All participants read and signed the voluntary participation forms.

Conclusion

As a result, hedonic hunger increased as the mental health continuum decreased (unwellness) in adults in this study. It has been determined that women exhibit more hedonic hunger than men. However, this difference in hedonic hunger may be due to a different reason, since there was no difference between men and women in terms of well-being, normal and unwellness state. It has been determined that there is a positive relationship between hedonic hunger and the consumption of chips and fast-food. This result coincides with the expression of eating for pleasure in the definition of hedonic hunger.

As far as we know, the study is the first study on the mental health continuum and hedonic hunger, and this is the highlight of the study. However, the limited number of participants and the fact that the majority of participants were in a normal mood and well-being were among the limitations of the study. We believe that our study will be an example of a future study on this subject.

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