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# The Relationship of emotion regulation difficulties and hedonic hunger situations with food addiction: a study on health professionals<sup>1</sup>

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## Abstract

**Aim:** This study was to evaluate emotion regulation difficulties and hedonic hunger situations in healthcare workers and examine the relationship with food addiction.

**Method:** A questionnaire consisting of demographic characteristics, Difficulty in Emotion Regulation Scale (DERS), Power of Food Scale (PFS) and Yale Food Addiction Scale (YFAS) was administered to participants and analyzed in SPSS v26. A total of 671 healthcare workers, 465 females and 206 males, participated in the study and the mean age of the participants was  $34,69 \pm 10,11$  years, mean body mass index was  $23,97 \pm 3,24$  kg/m<sup>2</sup>.

**Results:** It was found that a significantly increase in the score of healthcare workers DERS-16 increases the score of YFAS and an increase score of PFS increases the score of YFAS. It was found that significantly as the “YFAS Total” scores of the healthcare workers increased, the “Clarity”, “Goals” sub-factor scores of DERS-16 and “DERS-16 Total” scores and the “Food Present”, “Food Available”, “Food Tasted” sub-factor of PFS and “PFS Total” scores increased.

**Conclusion:** As the emotion regulation difficulties and hedonic hunger scores increased, the food addiction scores increased.

**Keywords:** Eating, food addiction, health personnel, emotional regulations, hunger

## 1. Introduction

Emotion refers to a system accompanied by physiological changes as a result of the reaction to various stimuli (Ching and Chan, 2020). Emotion regulation is used to express situations such as influencing and changing people’s own emotions and the emotions of others (McRae and Gross, 2020). As a result of using emotion regulation ability effectively, there are some positive results such as increased work performance and managing bilateral relationships well, and positive results can

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also be seen in mental and physical health. On the contrary, not managing emotion regulation well can lead to various psychological disorders such as depression and anxiety (Morawetz et al., 2020). As a result of emotion dysregulation, people who cannot regulate their negative emotions may consume more food as a reaction (Jones and Herr, 2018; Guerrini-Usubini et al., 2023).

Food intake is regulated by two different pathways, hedonic and homeostatic (Aliasghari et al., 2019). Hedonic hunger occurs in a pleasure-oriented, impulsive manner, despite the absence of physiological need, because of environmental triggers and can also be triggered by negative emotions, increased stress and anxiety (Yalçın et al., 2023). In a study conducted by Arslan et al. in 2022 with individuals working at a desk, it was concluded that there was a weak positive correlation between hedonic hunger and emotion dysregulation and that an increase in hedonic hunger total scores led to an increase in emotion dysregulation total scores (Arslan et al., 2022). In the study conducted by Horwath et al. in 2020 with adult individuals, it was reported that consumption of more fatty and salty foods and consumption of more sugary foods were associated with higher hedonic hunger scores (Horwath et al., 2020). In the study conducted by Lipsky et al. in 2021, consumption of “processed, delicious” foods containing sugar, fat and salt was more frequent in young adults who reported hedonic hunger (Lipsky et al., 2021). Food addiction stimulates dopamine release, affects the mesolimbic system and activates the reward system and although the person knows the consequences, he/she cannot maintain self-control and continues this behavior (Gordon et al., 2018). In a study conducted by Ouellette et al. in 2018 with individuals diagnosed with obesity, it was reported that individuals with food addiction had higher hedonic hunger sub-factor scores of “Food Present”, “Food Available”, and “Food Tasted” than other individuals (Ouellette et al., 2018). In the study conducted by Taş and Gezer in 2022, it was reported that no relationship was found between food addiction status and hedonic hunger status (Taş and Gezer, 2022).

## 2. Purpose

This study aimed to emotion regulation difficulties and hedonic hunger situations in healthcare workers and examine the relationship with food addiction.

## 3. Method

### 3.1. The place and time of the study

The questionnaire was applied face-to-face to healthcare professionals working in Çorum Private Hospital and Çorum Private Elitpark Hospital between November 2022 and January 2023.

### 3.2. Population and sample selection

The study was conducted with the participation of 671 health workers.

### 3.3. Type of study

This research is a cross-sectional study.

### 3.4. Data collection

#### 3.4.1. Data collection method

Questionnaire was applied face-to-face

#### 3.4.2. Data collection tools

Questionnaire consisting of demographic characteristics, anthropometric measurements and questions questioning nutritional status, Difficulty in Emotion Regulation Scale (DERS), Power of Food Scale (PFS) and Yale Food Addiction Scale (YFAS).

##### 3.4.2.1. Anthropometric measurements of participants

Anthropometric measurements of the healthcare workers were performed by the researcher. The body weights of the participants were measured with a “Tefal 1063 Premiss brand scale and their heights were measured with a non-flexible tape measure fixed to the wall in the Frankfurt

plane without shoes and with feet together". BMI values were "calculated by dividing body weight (kg) by the square of height (kg/m<sup>2</sup>)" and classified according to the "World Health Organization's (WHO)" BMI classification.

#### **3.4.2.2. Difficulty in emotion regulation scale**

Gratz and Roemer (2004) developed the "Difficulties in Emotion Regulation Scale (DERS)". The scale, which consisted of "36 items" when it was first created, was later developed by Bjureberg and colleagues (2016) as a "16-item short version of the scale" the DERS-16. The Turkish validity and reliability study of the DERS-16 was conducted by Yiğit and Yiğit in 2019 and the results showed that the Cronbach's alpha coefficients of the subscales ranged between ".80 and .91". The DERS-16 was constructed using a "5-point Likert scale" and "total scores ranged from 16 to 80". The emotion dysregulation scale consists of five sub-dimensions. While the first two questions are related to the "clarity" sub-dimension, questions 3, 5 and 17 are "goals", questions 4, 8 and 11 are "impulse", questions 5, 6, 12, 14 and 16 are "strategies", and questions 9, 10 and 13 are "nonacceptance" sub-dimensions. High scores were associated with more difficulty in emotion regulation.

#### **3.4.2.3. Power of food scale**

Power of Food Scale was developed by Lowe et al. (2009). The food power scale has a "5-point Likert scale" consisting of 15 items to determine hedonic hunger status. The "validity and reliability" study of the Turkish adaptation of the PFS was conducted by Ülker et al. Cronbach's alpha coefficient for the Turkish version was found to be 0.922 The first sub-factor, food available, assumes the presence of palatable foods despite the absence of food in the environment and is defined through questions 1, 2, 5, 10, 11 and 13 on the scale. The second sub-factor, food present, refers to food present in the physical environment but not tasted and is defined by questions 3, 4, 6 and 7 on the scale. The third sub-factor, food tasted, is defined by questions 8, 9, 12, 14 and 15 on the scale, which refers to the fact that only tasty foods have been tasted without consuming all of them. The overall scoring of the scale is based on 5 points. Each question receives a score between 1 and 5 and the resulting score is divided by the number of items.

#### **3.4.2.4. Yale food addiction scale**

The Yale Food Addiction Scale was developed by Gearhardt et al. (2009). The Yale Food Addiction Scale consists of 27 items. It was translated into Turkish by Bayraktar et al. (2012). The validity and reliability study of the scale was conducted by Sevinçer et al. (2015). The scale consists of 8 sub-factors. The scoring of the questions in the scale; while the score for the "0" answer given in questions 19, 20, 21 and 22 is "0", the score for the "1" answer is "1". In the 24th question, the score for the "0" answer is "1" and the score for the "1" answer is "0". If "0 or 1" is marked in Questions 8, 10 and 11, it means a score of "0"; if "2, 3, 4" is marked, it means a score of "1". For questions 3, 5, 7, 9, 12, 13, 14, 15, 16, a score of 0 is given if marked as "0, 1 or 2" and a score of 1 is given if marked as "3 or 4". For questions 1, 2, 4 and 6, marking "0, 1, 2, 3" gives a score of "0" and marking "4" gives a score of "1". In question 25, a score of 0 is given for marking "0, 1, 2, 3, 4" and a score of 1 is given for marking "5". Questions 17, 18 and 23 are not calculated. Clinical significance means that one of the questions 15 or 16 (Criterion 8) must score "1" and the sum of the symptom scores (first 7 criteria) must be 3 or above.

### **3.5. Limitations of the study**

The study was limited to private hospitals in the Çorum provincial center.

### **3.6. Research ethics**

This research was started after the approval of the ethics committee with the 11th meeting of "Uskudar University Non-Interventional Ethics Committee" held on 26/10/2022 (no. 61351342).

### **3.7. Evaluation of data**

Descriptive statistics for categorical variables (demographic characteristics) were given as frequency and percentage. The conformity of numerical variables to normal distribution was checked with the "Shapiro-Wilk Test". Descriptive statistics of numerical variables are given as

“mean±standard deviation ( $\bar{X} \pm SD$ )” for normally distributed data. For non-normally distributed data, the relationships between the scales were determined using “Spearman’s Rank Difference Correlation Coefficient”. In the interpretation of the correlation coefficient, the following criteria were used: “<0.2 is a very weak correlation”, “0.2-0.4 is a weak correlation”, “0.4-0.6 is a moderate correlation”, “0.6-0.8 is a high correlation”, “0.8> is a very high correlation” (Choi et al., 2010). “Multiple Regression Analysis” was used to test the effect between variables. In all calculations and interpretations in the study, the statistical significance level was considered as “ $p < 0.05$ ,  $p < 0.01$ ,  $p < 0.001$ ” and hypotheses were established bi-directionally. Statistical analysis of the data was performed in the SPSS v26 (IBM Inc., Chicago, IL, USA) package program.

#### 4. Results

Among the healthcare workers who participated in the study, 30.7% (206 people) were male and 69.3% (465 people) were female. 65.1% (437 people) of the participants were married and 34.9% (234 people) were single. 10.6% (71 people) of the participants were doctors, 27.4% (184 people) were nurses, 19.8% (133 people) were assistant health personnel, 32.6% (219 people) were other health personnel and 9.6% (64 people) were management personnel (Table 1).

**Table 1.** Descriptive statistics of demographic, employment, BMI, habits and nutritional findings of healthcare workers according to gender

	Gender					
	Male		Female		Total	
	n	%	n	%	n	%
<b>Marital Status</b>						
Married	149	72,3	288	61,9	437	65,1
Single	57	27,7	177	38,1	234	34,9
<b>Employed Institution</b>						
Çorum Private Hospital	128	62,1	266	57,2	394	58,7
Çorum Private Elitpark Hospital	78	37,9	199	42,8	277	41,3
<b>Profession</b>						
Doctor	61	29,6	10	2,2	71	10,6
Nurse	33	16,0	151	32,5	184	27,4
Assistant Health Personnel	46	22,4	87	18,7	133	19,8
Other Health Personnel	55	26,7	164	35,2	219	32,6
Management Personnel	11	5,3	53	11,4	64	9,6
<b>BMI Group</b>						
Thin	1	0,5	15	3,2	16	2,4
Normal weight	111	53,9	325	69,9	436	65,0
Preobese	81	39,3	101	21,7	182	27,1
Obese	13	6,3	24	5,2	37	5,5
<b>BMI (kg/m<sup>2</sup>)**</b>	25,11±2,94		23,46±3,25		23,97±3,24	
<b>Smoking Status</b>						
Yes	108	52,4	173	37,2	281	41,9
No	98	47,6	292	62,8	390	58,1
<b>Alcohol Use Status</b>						
Yes	58	28,2	70	15,1	128	19,1
No	148	71,8	395	84,9	543	80,9
<b>Average Daily Water Consumption</b>						
Between 0≤1 lt/day	20	9,7	84	18,1	104	15,5
Between 1≤1,5 lt/day	48	23,3	169	36,2	217	32,4

Between 1,5≤2 lt/day	66	32,0	138	29,7	204	30,4
Between 2≤2,5 lt/day	41	19,9	57	12,3	98	14,6
Between 2,5≤3 lt/day	20	9,7	11	2,4	31	4,6
3 lt/day and more	11	5,4	6	1,3	17	2,5
<b>Meal Skipping Status</b>						
Yes	122	59,2	317	68,2	439	65,4
No	84	40,8	148	31,8	232	34,6
<b>Skipped Meal*</b>						
Breakfast	51	41,8	115	36,3	166	37,8
Breakfast-Lunch	53	43,4	121	38,2	174	39,6
Lunch	13	10,7	49	15,5	62	14,1
Lunch-Dinner	49	40,2	124	39,1	173	39,4
Dinner	4	3,3	6	1,9	10	2,3
Night	39	32,0	97	30,6	136	31,0

\*: More than one answer was given\*\*: Mean ±Standard Deviation

According to the gender of health care workers; the median of DERS-16 sub-factor scores of “Clarity” [4 (2-10)] (U=42361; p<0,05), “Goals” [5 (3-15)] (U=40490,5; p<0,01), “Impulse” [5 (3-15)] (U=40608,5; p<0,01), “Strategies” [8 (5-15)] (U=39861; p<0.001), “Nonacceptance” [5 (3-15)] (U=40848.5; p<0.01) and “DERS-16 Total” scores (U=39509; p<0.001) [25 (16-79)] were found statistically higher in women than in men (Table 2). The median scores of “Food Present” [2.3 (1-5)] (U=38993.5; p<0.001), “Food Available” [2.5 (1-5)] (U=41963; p<0.05) and “PFS Total” [2.5 (1-4.9)] (U=40991.5; p<0.01) of the PFS of healthcare workers were statistically higher for women than men (Table 2).

As the age of healthcare workers increased, there was a 17.5%, 17.9%, 12.2%, 11.9%, 10.5% and 17.7% decrease in the “Clarity”, “Goals”, “Impulse”, “Strategies”, “Nonacceptance” sub-factor scores of DERS-16 and “DERS-16 Total” scores, respectively (p<0.01; p<0.001) (Table 2).

It was found that as the age of the healthcare workers increased, there was a 12.4%, 16%, 11.4%, and 14.4% decrease in the “Food Present”, “Food Available”, “Food Tasted” sub-factor scores of the PFS and “PFS Total” scores (Table 2).

As the BMI values of the healthcare workers increased, it was found that there was an increase of 10.8%, 9.9%, 9% and 10.6% in the “Food Present”, “Food Available”, “Food Tasted” sub-factor scores and “PFS Total” scores of the PFS (p<0.05; p<0.01) (Table 2).

The median of males [1 (0-1)] was found to be statistically higher than females [0 (0-1)] in the sub-factor scores of the YFAS “Continued Use Despite Knowing Bad Effects and Consequences” (U=43302.5; p<0.05) (Table 3).

As the BMI values of the healthcare workers increased, it was found that there was an increase of 12.5 and 11.5 in the sub-factor scores of “Decreased or Abandoned Social Life, Work Life and Leisure Time Activities” and “Clinical Impairments” of the YFAS, respectively (p<0.01) (Table 3).

**Table 2.** Comparison of DERS-16 and PFS scores of healthcare workers according to gender and correlation coefficients between age, BMI values and DERS-16 and PFS scores

		Clarity	Goals	Impulse	Strategies	Nonacceptance	DERS-16 Total	Food Present	Food Available	Food Tasted	PFS Total
		Median (min- max)	Median (min- max)	Median (min- max)	Median (min- max)	Median (min-max)	Median (min-max)	Median (min-max)	Median (min-max)	Median (min-max)	Median (min-max)
<b>Gender</b>											
Male		3 (2-10)	4 (3-15)	4 (3-11)	7 (5-17)	4 (3-11)	23 (16-54)	2 (1-4,3)	2,3 (1-5)	2,6 (1-5)	2,2 (1-4,3)
Female		4 (2-10)	5 (3-15)	5 (3-15)	8 (5-25)	5 (3-15)	25 (16-79)	2,3 (1-5)	2,5 (1-5)	2,6 (1-5)	2,5 (1-4,9)
<b>U</b>		<b>42361</b>	<b>40490,5</b>	<b>40608,5</b>	<b>39861</b>	<b>40848,5</b>	<b>39509</b>	<b>38993,5</b>	<b>41963</b>	44038	<b>40991,5</b>
<b>p</b>		<b>0,014*</b>	<b>0,001**</b>	<b>0,001**</b>	<b>&lt;0,001**</b> *	<b>0,002**</b>	<b>&lt;0,001***</b>	<b>&lt;0,001***</b>	<b>0,010*</b>	0,095	<b>0,003**</b>
<b>Age (years)</b>	<b>s</b>	<b>-0,175</b>	<b>-0,179</b>	<b>-0,122</b>	<b>-0,119</b>	<b>-0,105</b>	<b>-0,177</b>	<b>-0,124</b>	<b>-0,160</b>	<b>-0,114</b>	<b>-0,144</b>
	<b>p</b>	<b>&lt;0,001***</b>	<b>&lt;0,001**</b> *	<b>0,002**</b>	<b>0,002**</b>	<b>0,006**</b>	<b>&lt;0,001***</b>	<b>0,001**</b>	<b>&lt;0,001***</b>	<b>0,003**</b>	<b>&lt;0,001***</b>
<b>BMI (kg/m<sup>2</sup>)</b>	<b>s</b>	0,040	0,055	0,060	0,067	0,017	0,060	<b>0,108</b>	<b>0,099</b>	<b>0,090</b>	<b>0,106</b>
	<b>p</b>	0,300	0,154	0,119	0,082	0,654	0,120	<b>0,005**</b>	<b>0,011*</b>	<b>0,020*</b>	<b>0,006**</b>

U: Mann-Whitney U Test; s: Spearman Rank Difference Correlation Coefficient

\*p&lt;0,05; \*\*p&lt;0,01; \*\*\*p&lt;0,001 DERS-16: Difficulty in Emotion Regulation Scale PFS: Power of Food Scale BMI: Body Mass Index

**Table 3.** Comparison of YFAS scores of healthcare workers according to gender and correlation coefficients between age, BMI values and YFAS scores

		YFAS-1	YFAS-2	YFAS-3	YFAS-4	YFAS-5	YFAS-6	YFAS-7	YFAS-8	YFASTotal
		Median (min- max)	Median (min- max)	Median (min- max)	Median (min- max)	Median (min-max)	Median (min-max)	Median (min-max)	Median (min-max)	Median (min-max)
<b>Gender</b>										
Male		0 (0-3)	1 (0-3)	0 (0-2)	0 (0-4)	1 (0-1)	1 (0-2)	0 (0-2)	0 (0-2)	4 (0-11)
Female		0 (0-3)	1 (0-3)	0 (0-3)	0 (0-4)	0 (0-1)	1 (0-2)	0 (0-3)	0 (0-2)	4 (0-15)
<b>U</b>		<b>47747,5</b>	<b>46645,5</b>	<b>45090</b>	<b>47641</b>	<b>43302,5</b>	<b>45258</b>	<b>46900</b>	<b>47020,5</b>	<b>45477</b>
<b>p</b>		<b>0,927</b>	<b>0,558</b>	<b>0,090</b>	<b>0,863</b>	<b>0,022*</b>	<b>0,222</b>	<b>0,459</b>	<b>0,539</b>	<b>0,289</b>
<b>Age (years)</b>	<b>s</b>	<b>-0,002</b>	<b>0,027</b>	<b>-0,040</b>	<b>-0,009</b>	<b>0,050</b>	<b>0,001</b>	<b>-0,007</b>	<b>0,004</b>	<b>0,021</b>
	<b>p</b>	<b>0,969</b>	<b>0,479</b>	<b>0,300</b>	<b>0,819</b>	<b>0,199</b>	<b>0,978</b>	<b>0,863</b>	<b>0,924</b>	<b>0,590</b>
<b>BMI (kg/m<sup>2</sup>)</b>	<b>s</b>	0,027	-0,071	0,046	<b>0,125</b>	0,023	-0,027	0,034	<b>0,115</b>	0,057
	<b>p</b>	0,493	0,065	0,233	<b>0,001**</b>	0,548	0,492	0,379	<b>0,003**</b>	0,137

YFAS-1: Excessive and Prolonged Consumption of Food; YFAS-2: Desire to Quit and Unsuccessful Quit Attempts; YFAS-3: Time and Activity Level Spent in Recovery, Access to Substance and Use; YFAS-4: Decreased or Abandoned Social Life, Work Life and Leisure Activities; YFAS-5: Continued Use Despite Knowing Bad Effects and Consequences; YFAS-6: Tolerance (Observed Increase in Amount and Decrease in Effect); YFAS-7: Withdrawal Symptoms and Continued Use to Reduce Withdrawal Symptoms; YFAS-8: Clinically Significant Impairments; YFAS: Yale Food Addiction Scale Total Score

U: Mann-Whitney U Test; s: Spearman Rank Difference Correlation Coefficient \*p&lt;0,05; \*\*p&lt;0,01 BMI: Body Mass Index

As the “Excessive Consumption of Food in Excessive Amount and for a Long Time” sub-factor scores of the YFAS increased, the “Goals”, “Strategies”, “Nonacceptance” sub-factor scores of the DERS-16 and the “DERS-16 Total” scores increased by 11.4%, 12.3%, 8.2% and 11%, respectively (Table 4).

As the “Consumption of Food in Excessive Amount and for a Long Time” of the YFAS increased, the sub-factor scores of “Food Present”, “Food Available”, “Food Tasted” and “Total PFS” scores of the PFS increased by 19.2%, 17.9%, 20.2% and 20.6%, respectively (Table 4).

As the “Recovery, Access to Substance and Continued Use” sub-factor scores of the YFAS increased, there was an increase of 11.2%, 19.2%, 16.9%, 18%, 17.1% and 19.6% in the “Clarity”, “Goals”, “Impulse”, “Strategies”, “Nonacceptance” sub-factor scores and “DERS-16 Total” scores of the DERS-16, respectively (Table 4).

As the “Recovery, Access to Substance and Continued Use” sub-factor scores of the YFAS increased, the “Food Present”, “Food Available”, “Food Tasted” sub-factor scores and “PFS Total” scores of the PFS increased by 17.8%, 18.3%, 16.8% and 18.7%, respectively (Table 4).

As the “Decreased or Abandoned Social Life, Work Life and Leisure Time Activities” sub-factor scores of the YFAS increased, there was an increase of 16.3%, 11.5%, 10.1%, 10.3% and 12.4% in the “Clarity”, “Impulse”, “Strategies”, “Nonacceptance” sub-factor scores of the DERS-16 and “DERS-16 Total” scores, respectively (Table 4).

As the sub-factor scores of “Decreased or Abandoned Social Life, Work Life and Leisure Time Activities” of the YFAS increased, the sub-factor scores of “Food Present”, “Food Available”, “Food Tasted” and “Total PFS” scores of the PFS increased by 12.7%, 9%, 11.7% and 12.2%, respectively (Table 4).

It was found that as the “Continued Use Despite Knowing Bad Effects and Consequences” sub-factor scores of the YFAS increased, there was a decrease of 8.3%, 8.2%, 9.5% and 8.1% in the “Impulse”, “Strategies”, “Nonacceptance” sub-factor scores of the DERS-16 and “DERS-16 Total” scores, respectively (Table 4).

It was found that as the “Tolerance (Observed Increase in Amount and Decrease in Effect)” sub-factor scores of the YFAS increased, there was a 7.8% increase in the “Impulse” sub-factor scores of the DERS-16 (Table 4).

As the “Withdrawal Symptoms and Continued Use to Reduce Withdrawal Symptoms” sub-factor scores of the YFAS increased, there was an increase of 11.5%, 13.6%, 7.9%, 9.8%, 12.7% and 13.3% in the “Clarity”, “Goals”, “Impulse”, “Strategies”, “Nonacceptance” sub-factor scores of the DERS-16 and “DERS-16 Total” scores, respectively (Table 4).

As the “Withdrawal Symptoms and Continued Use to Reduce Withdrawal Symptoms” of the YFAS increased, the sub-factor scores of “Food Present”, “Food Available”, “Food Tasted” and “PFS Total” scores of the PFS increased by 13.4%, 9.5%, 12.4% and 13%, respectively (Table 4).

It was found that as the “Clinical Impairments” sub-factor scores of the YFAS increased, there was an increase of 15.6%, 15%, 16.1%, 17.6%, 17.1% and 19.7% in the “Clarity”, “Goals”, “Impulse”, “Strategies”, “Nonacceptance” sub-factor scores of the DERS-16 and “DERS-16 Total” scores, respectively (Table 4).

It was found that as the “Clinical Impairments” sub-factor scores of the YFAS increased, there was an increase of 20.3%, 14%, 15.4% and 18.5% in the “Food Present”, “Food Available”, “Food Tasted” sub-factor scores and “PFS Total” scores of the PFS, respectively (Table 4).

It was found that as the “YFAS Total” scores of the YFAS increased, the “Clarity”, “Goals” sub-factor scores of the DERS-16 and the “DERS-16 Total” scores of the healthcare workers increased by 9.6%, 10.7% and 8.6%, respectively (Table 4).

It was found that as the “YFAS Total” scores of the health care workers increased, there was an increase of 13.5%, 13%, 15.8% and 15.4% in the “Food Present”, “Food Available”, “Food Tasted” sub-factor scores and “PFS Total” scores of the PFS, respectively (Table 4).

**Table 4.** Correlation coefficients between DERS-16 and PFS sub-factor and total scores and YFAS sub-factor and total scores of healthcare workers

		YFAS-1	YFAS-2	YFAS-3	YFAS-4	YFAS-5	YFAS-6	YFAS-7	YFAS-8	YFAS-T
DERS-1	s	0,021	-0,035	<b>0,112</b>	<b>0,163</b>	-0,015	0,018	<b>0,115</b>	<b>0,156</b>	<b>0,096</b>
	p	0,583	0,364	<b>0,004**</b>	<b>&lt;0,001***</b>	0,701	0,651	<b>0,003**</b>	<b>&lt;0,001***</b>	<b>0,013*</b>
DERS-2	s	<b>0,114</b>	-0,020	<b>0,192</b>	0,075	-0,026	0,000	<b>0,136</b>	<b>0,150</b>	<b>0,107</b>
	p	<b>0,003**</b>	0,612	<b>&lt;0,001***</b>	0,052	0,494	0,996	<b>&lt;0,001***</b>	<b>&lt;0,001***</b>	<b>0,005**</b>
DERS-3	s	0,074	0,004	<b>0,169</b>	<b>0,115</b>	<b>-0,083</b>	<b>-0,078</b>	<b>0,079</b>	<b>0,161</b>	0,053
	p	0,054	0,923	<b>&lt;0,001***</b>	<b>0,003**</b>	<b>0,032*</b>	<b>0,044*</b>	<b>0,041*</b>	<b>&lt;0,001***</b>	0,168
DERS-4	s	<b>0,123</b>	-0,039	<b>0,180</b>	<b>0,101</b>	<b>-0,082</b>	-0,043	<b>0,098</b>	<b>0,176</b>	0,075
	p	<b>0,001**</b>	0,316	<b>&lt;0,001***</b>	<b>0,009**</b>	<b>0,035*</b>	0,263	<b>0,011*</b>	<b>&lt;0,001***</b>	0,051
DERS-5	s	<b>0,082</b>	-0,039	<b>0,171</b>	<b>0,103</b>	<b>-0,095</b>	-0,043	<b>0,127</b>	<b>0,171</b>	0,060
	p	<b>0,034*</b>	0,310	<b>&lt;0,001***</b>	<b>0,008**</b>	<b>0,014*</b>	0,265	<b>0,001**</b>	<b>&lt;0,001***</b>	0,118
DERS-T	s	<b>0,110</b>	-0,040	<b>0,196</b>	<b>0,124</b>	<b>-0,081</b>	-0,040	<b>0,133</b>	<b>0,197</b>	<b>0,086</b>
	p	<b>0,004**</b>	0,300	<b>&lt;0,001***</b>	<b>0,001**</b>	<b>0,036*</b>	0,305	<b>0,001**</b>	<b>&lt;0,001***</b>	<b>0,027*</b>
PFS-1	s	<b>0,192</b>	0,012	<b>0,178</b>	<b>0,127</b>	<b>-0,093</b>	-0,056	<b>0,134</b>	<b>0,203</b>	<b>0,135</b>
	p	<b>&lt;0,001***</b>	0,753	<b>&lt;0,001***</b>	<b>0,001**</b>	<b>0,016*</b>	0,150	<b>0,001**</b>	<b>&lt;0,001***</b>	<b>&lt;0,001***</b>
PFS-2	s	<b>0,179</b>	-0,033	<b>0,183</b>	<b>0,090</b>	-0,010	0,009	<b>0,095</b>	<b>0,140</b>	<b>0,130</b>
	p	<b>&lt;0,001***</b>	0,387	<b>&lt;0,001***</b>	<b>0,020*</b>	0,790	0,823	<b>0,014*</b>	<b>&lt;0,001***</b>	<b>0,001**</b>
PFS-3	s	<b>0,202</b>	-0,025	<b>0,168</b>	<b>0,117</b>	0,003	0,013	<b>0,124</b>	<b>0,154</b>	<b>0,158</b>
	p	<b>&lt;0,001***</b>	0,524	<b>&lt;0,001***</b>	<b>0,002**</b>	0,936	0,742	<b>0,001**</b>	<b>&lt;0,001***</b>	<b>&lt;0,001***</b>
PFS-T	s	<b>0,206</b>	-0,019	<b>0,187</b>	<b>0,122</b>	-0,038	-0,011	<b>0,130</b>	<b>0,185</b>	<b>0,154</b>
	p	<b>&lt;0,001***</b>	0,620	<b>&lt;0,001***</b>	<b>0,002**</b>	0,323	0,776	<b>0,001**</b>	<b>&lt;0,001***</b>	<b>&lt;0,001***</b>

DERS-1: Clarity; DERS-2: Goals; DERS-3: Impulse; DERS-4: Strategies; DERS-5: Nonacceptance; DERS-T: Difficulty in Emotion Regulation Scale Total Score; PFS-1: Food Availability; PFS-2: Food Availability; PFS-3: Food Palatability; PFS-T: Food Power Scale Total Score; YFAS-1: Excessive and Prolonged Consumption of Food; YFAS-2: Desire to Quit and Unsuccessful Quit Attempts; YFAS-3: Time Spent and Level of Activity Toward Recovery, Access to and Use of Substance; YFAS-4: Decreased or Abandoned Social Life, Work Life and Leisure Time Activities; YFAS-5: Continued Use Despite Knowing Bad Effects and Consequences; YFAS-6: Tolerance (Observed Increase in Quantity and Decrease in Effect); YFAS-7: Withdrawal Symptoms and Continued Use to Reduce Withdrawal Symptoms; YFAS-8: Clinically Significant Impairments; YFAS: Yale Food Addiction Scale Total Score  
s: Spearman Rank Difference Correlation Coefficient

\*p<0,05;\*\*p<0,01;\*\*\*p<0,00



## 5. Discussion

In this study, most of the healthcare workers had normal weight and normal waist circumference according to BMI groups. Similarly, in studies conducted with healthcare workers, most participants were reported to have normal weight and normal waist circumference according to BMI groups (Kunyahamu et al., 2021; Arslan and Aydemir, 2019). In different studies conducted with healthcare professionals, it was reported that the majority of the individuals included in the study were preobese and obese and also had high waist circumference measurements (Oosei-Yeboah et al., 2018; Kit et al., 2020). This may be explained by the fact that healthcare workers are more knowledgeable about nutrition and at the same time, most of the individuals included in the study had normal weight according to BMI groups (Mengi Çelik and Semerci, 2022).

In this study, the median scores of female health care workers in the emotion dysregulation sub-factors and “DERS-16 Total” were higher than those of males. Similarly, in studies, it was found that female participants had higher scores in the sub-factors “Clarity”, “Goals”, “Impulse”, “Strategies”, “Nonacceptance” sub-factors and “DERS-16 Total” among the sub-factors of emotion dysregulation (Yiğit and Yiğit, 2019; Yap et al., 2018). This may be explained by the fact that women who have difficulty in controlling their emotions act more impulsively than men, do not accept events and results easily, act impulsively in response to their emotions, are not clear about their target emotions, have difficulties in accepting their emotions, and do not use emotion regulation strategies correctly and effectively (Carlton et al., 2020).

In this study, the median scores of hedonic hunger sub-factors “Food Present”, “Food Available” and “PFS Total” were higher in female healthcare workers than male healthcare workers. Similarly, in studies, it was found that the scores of “Food Present”, “Food Available” and “PFS Total” were higher in female individuals compared to male individuals, and the sub-factor of “Food Tasted” was also higher in female individuals (Yalçın et al., 2023). Differently, the total PFS scores of male subjects were found to be higher than those of female subjects (Arslan et al., 2022). This may be explained by the fact that women are more affected by emotional processes and turn to nutrients to cope with these processes, and in parallel to this, they turn to foods that are easily accessible at that moment and give more importance to food availability and availability (İnalkaç and Arslantaş, 2018).

In this study, as the BMI values of the participants increased, sub-factor scores and “PFS Total” scores of the PFS increased ( $p < 0.05$ ). Similarly, in a study conducted by Yalçın et al. in 2023 with young adults, it was reported that as BMI values increased, “Food Present”, “Food Available” and “PFS Total” scores increased, but differently, “Food Tasted” score decreased (Yalçın et al., 2023). Similarly, in the study conducted by Arslan et al. in 2022, it was reported that as BMI values increased, “PFS Total” scores also increased (Arslan et al., 2022). This can be explained by the fact that hedonic hunger causes an increase in food consumption, which leads to an increase in the body weight network, which leads to obesity as a result of an increase in BMI values, and that these individuals prefer to taste foods and prefer foods that they can reach quickly and easily (Feig et al., 2018).

In this study, as the BMI values increased, the sub-factor scores of “Decreased or Abandoned Social Life, Work Life and Leisure Time Activities” and “Clinical Impairments” of the YFAS increased. This can be explained by the fact that individuals are stigmatized in society due to the increase in weight due to the increase in BMI, their social life is put on the back burner and they behave timidly. At the same time, as a result of metabolic and hormonal changes, they see foods that can cause addiction as a rewarding and relaxation tool, so these foods are consumed in excessive amounts and for a long time. Even clinical deterioration can cause food addiction (Demirer and Pınar, 2022).

In this study, it was found that as the “YFAS Total” scores of the YFAS increased, the “Clarity”, “Goals” sub-factor scores of the DERS-16 and the “DERS-16 Total” scores increased, and the “Food Present”, “Food Available”, “Food Tasted” and “PFS Total” scores of the PFS

increased in healthcare workers. This situation can be explained by the increase in the severity of addiction as a result of the increase in the total score of food addiction, the difficulty in regulating emotions characterized by individuals not being clear about their emotions, having difficulty in feeling the target emotion, and the increase in the severity of food addiction, especially the emergence of hedonic hunger as a result of the increase in individuals' interest in these foods in parallel with the enjoyment as a result of the stimulation of the dopaminergic system, the brain reward system of foods with high hedonic value, which are delicious, easily accessible, available in most environments (Koch et al., 2020).

## 6. Conclusion

As a result, it was found that the median DERS sub-factor and total scores and the median PFS sub-factor and total scores of women were higher than men. As the BMI values of the participants increased, the PFS sub-factor and total score increased, and as the DERS-16 and PFS scores increased, the YFAS scores increased.

## References

- Aliasghari, F., Yaghin, N., Behavior, R. M. (2019). Relationship between hedonic hunger and serum levels of insulin, leptin and BDNF in the Iranian population. *Physiology & Behavior*, 199, 84–87. <https://doi.org/10.1016/j.physbeh.2018.11.013>
- Arslan, M., Aydemir, İ. (2019). Relationship between emotional appetite, eating attitudes, sleep quality, and body mass index in healthcare workers: a multi-centre study. *Psychiatry and Clinical Psychopharmacology*, 29(3), 346-353. <https://doi.org/10.1080/24750573.2019.1627694>
- Arslan, M., Baş, E. B., Tuncer, F. (2022). Masa başı çalışan bireylerde makro-mikro besin ögesi alımlarının hedonik açlık, kronotip ve duygu düzenleme güçlüğü üzerine etkisi . *Karya Journal of Health Science*, 3(3), 237-245. <https://doi.org/10.52831/kjhs.1182918>
- Bayraktar, F., Erkmán, F., & Kurtulus, E. (2012). Adaptation study of Yale food addiction Scale. *Psychiatry and Clinical Psychopharmacology*, 22(1), 38.
- Bjureberg, J., Ljótsson, B., Tull, M. T., Hedman, E., Sahlin, H., Lundh, L. G., Gratz, K. L. (2016). Development and validation of a brief version of the difficulties in emotion regulation scale: the DERS-16. *Journal of Psychopathology and Behavioral Assessment*, 38(2), 284-296. <https://doi.org/10.1007/s10862-015-9514-x>.
- Body Mass Index-BMI [Internet], World Health Organization (WHO) [cited 2023 Feb 17]. Available From: <https://www.who.int/europe/news-room/fact-sheets/item/a-healthy-lifestyle---who-recommendations>.
- Carlton, S., Harrison, A., Honoré, S., Goodmon, L. B. (2020). Conceal, Don't Feel: Gender Differences in Implicit and Explicit Expressions of Emotions. *Modern Psychological Studies*, 25(1), 10.
- Ching, C., Chan, V. (2020). Positive emotions, positive feelings and health: A life philosophy. *Lingcure*, 4(1), 1-14. <https://doi.org/10.21744/lingcure.v4n1.16>.
- Choi, J., Peters, M., & Mueller, R. O. (2010). Correlational analysis of ordinal data: from Pearson'sr to Bayesian polychoric correlation. *Asia Pacific education review*, 11, 459-466. <https://doi.org/10.1007/s12564-010-9096-y>
- Demirer, B., Pınar, A. A. (2022). Besin Bağımlılığı ve Obezite İlişkisi. *Akdeniz Tıp Dergisi*, 8(3), 354-359. <https://doi.org/10.53394 / akd.1059563>
- Feig, E. H., Piers, A. D., Kral, T. V., Lowe, M. R. (2018). Eating in the absence of hunger is related to loss-of-control eating, hedonic hunger, and short-term weight gain in normal-weight women. *Appetite*, 123, 317-324. <https://doi.org/10.1016/j.appet.2018.01.013>
- Gearhardt AN, Corbin WR, Brownell KD. (2009). Preliminary validation of the Yale Food Addiction Scale. *Appetite*. 52, 430-436. <https://doi.org/10.1016/j.appet.2008.12.003>

Canberi, B. Ü., & Arslan, M. (2024). The Relationship of emotion regulation difficulties and hedonic hunger situations with food addiction: a study on health professionals. *Journal of Human Sciences*, 21(2), 174-185. doi:[10.14687/jhs.v21i2.6456](https://doi.org/10.14687/jhs.v21i2.6456)

- Gonçalves, S., Moreira, C. S., Machado, B. C., Bastos, B., Vieira, A. I. (2021). Psychometric properties and convergent and divergent validity of the Portuguese Yale Food Addiction Scale 2.0 (P-YFAS 2.0). *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 1-11. <https://doi.org/10.1007/s40519-021-01218-0>
- Gordon, E. L., Ariel-Donges, A. H., Bauman, V., Merlo, L. J. (2018). What is the evidence for “food addiction?” A systematic review. *Nutrients*, 10(4), 1-30. <https://doi.org/10.3390/nu10040477>
- Gratz, K. L., Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54.
- Guerrini-Usubini, A., Cattivelli, R., Scarpa, A., Musetti, A., Varallo, G., Franceschini, C., Castelnovo, G. (2023). The interplay between emotion dysregulation, psychological distress, emotional eating, and weight status: A path model. *International Journal of Clinical and Health Psychology*, 23(1), 1-8. <https://doi.org/10.1016/j.ijchp.2022.100338>
- Horwath, C. C., Hagmann, D., & Hartmann, C. (2020). The Power of Food: Self-control moderates the association of hedonic hunger with overeating, snacking frequency and palatable food intake. *Eating behaviors*, 38, 1-9. <https://doi.org/10.1016/j.eatbeh.2020.101393>
- İnalkaç, S., Arslantaş, H. (2018). Duygusal yeme. *Arşiv Kaynak Tarama Dergisi*, 27(1), 70-82. <https://doi.org/10.17827/aktd.336860>
- Jones, A. C., Herr, N. R. (2018). Emotion differentiation mediates the association between emotion regulation difficulties and caloric intake. *Eating behaviors*, 29, 35-40. <https://doi.org/10.1016/j.eatbeh.2018.02.003>
- Kit, L. P., Saad, H. A., Jamaluddin, R., Phing, C. H. (2020). Prevalence of overweight and obesity among primary healthcare workers in Perak, Malaysia. *IIUM Medical Journal Malaysia*, 19(1). <https://doi.org/10.31436/imjm.v19i1.1327>
- Koch, C. E., Begemann, K., Kiehn, J. T., Griewahn, L., Mauer, J., Heß, M. E., Oster, H. (2020). Circadian regulation of hedonic appetite in mice by clocks in dopaminergic neurons of the VTA. *Nature Communications*, 11(1), 1–11. <https://doi.org/10.1038/s41467-020-16882-6>
- Kunyahamu, M. S., Daud, A., Jusoh, N. (2021). Obesity among health-care workers: which occupations are at higher risk of being obese? *International journal of environmental research and public health*, 18(8), 4381.
- Lipsky, L. M., Burger, K. S., Faith, M. S., Siega-Riz, A. M., Liu, A., Shearrer, G. E., Nansel, T. R. (2021). Pregnant Women Consume a Similar Proportion of Highly vs Minimally Processed Foods in the Absence of Hunger, Leading to Large Differences in Energy Intake. *Journal of the Academy of Nutrition and Dietetics*, 121(3), 446. <https://doi.org/10.1016/j.jand.2020.09.036>
- Lowe, M. R., Butryn, M. L., Didie, E. R., Annunziato, R. A., Thomas, J. G., Cserend, C. E., Halford, J. (2009). The Power of Food Scale. A new measure of the psychological influence of the food environment. *Appetite*, 53(1), 114. <https://doi.org/10.1016/j.appet.2009.05.016>
- McRae, K., Gross, J. J. (2020). Emotion regulation. *Emotion*, 20(1), 1. <https://doi.org/10.3758/s13415-020-00775-8>
- Mengi Çelik, Ö., Semerci, R. (2022). Evaluation of nutrition literacy and nutrition knowledge level in nursing students: a study from Turkey. *BMC nursing*, 21(1), 1-8. <https://doi.org/10.1186/s12912-022-01146-z>
- Osei-Yeboah, J., Kye-Amoah, K. K., Owiredu, W. K., Lokpo, S. Y., Esson, J., Bella Johnson, B., Asumbasiya Aduko, R. (2018). Cardiometabolic risk factors among healthcare workers: A cross-sectional study at the Sefwi-Wiawso Municipal Hospital, Ghana. *BioMed research international*, 2018. <https://doi.org/10.1155/2018/8904548>

Canberi, B. Ü., & Arslan, M. (2024). The Relationship of emotion regulation difficulties and hedonic hunger situations with food addiction: a study on health professionals. *Journal of Human Sciences*, 21(2), 174-185. doi:[10.14687/jhs.v21i2.6456](https://doi.org/10.14687/jhs.v21i2.6456)

- Ouellette, A. S., Rodrigue, C., Lemieux, S., Tchernof, A., Biertho, L., & Bégin, C. (2018). Establishing a food addiction diagnosis using the Yale Food Addiction Scale: A closer look at the clinically significant distress/functional impairment criterion. *Appetite*, 129, 55-61. <https://doi.org/10.1016/j.appet.2018.06.031>
- Sevinçer, G. M., Konuk, N., Bozkurt, S., Saraçlı, Ö., Coşkun, H. (2015). Psychometric properties of the Turkish version of the Yale Food Addiction Scale among bariatric surgery patients. *Anadolu Psikiyatri Dergisi*. 16(1), 44.
- Taş, F., Gezer, C. (2022). The relationship of hedonic hunger with food addiction and obesity in university students. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 27(7), 2835-2843. <https://doi.org/10.1007/s40519-022-01436-0>
- Ülker, I., Ayyıldız, F., Yildiran, H. (2021). Validation of the Turkish version of the power of food scale in adult population. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 26(4), 1179-1186. <https://doi.org/10.1007/s40519-020-01019-x>
- Yalçın, T., Ayyıldız, F., Yılmaz, M. V., & Asil, E. (2023). Relationship of perceived depression, stress, anxiety levels and hedonic hunger. *International Journal of Obesity*, 1-7. <https://doi.org/10.1038/s41366-023-01315-3>
- Yap, K., Mogan, C., Moriarty, A., Dowling, N., Blair-West, S., Gelgec, C., & Moulding, R. (2018). Emotion regulation difficulties in obsessive-compulsive disorder. *Journal of clinical psychology*, 74(4), 695-709. <https://doi.org/10.1002/jclp.22553>
- Yiğit, İ., Yiğit, G., M. (2019). Psychometric properties of Turkish version of difficulties in emotion regulation scale-brief form (DERS-16). *Current Psychology*, 38(6), 1503-1511. <https://doi.org/10.1007/s12144-017-9712-7>