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Investigation of the relationship between weight self-stigma, emotional eating, and diet satisfaction in obese individuals

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ABSTRACT

Objectives: Obese people are often stigmatized and discriminated against as unmotivated, incompatible, sloppy, undisciplined, and lazy because of their excess weight. The stigma associated with weight has serious adverse effects on mental health, social functioning, and physical health. It has been suggested that weight stigma can be internalized and lead to the development and maintenance of self-stigma.

Methods: Personal Information Form, Turkish Emotional Eating Scale (EES), Weight Self-Stigma Scale (WSSQ), and Diet Satisfaction Scale (DSS) were used.

Results: One hundred forty-five volunteer obese individuals who applied to the Diet Clinic and whose informed consent was obtained were included in the study. When the differences between the scale scores of the individuals according to demographic, health, and nutrition findings are examined, it is seen that the TEES scores according to the gender and income status of the obese individuals, the WSSQ scores according to the gender and employment status of the obese individuals, and the DSS scores according to the income status of the obese individuals, the psychological diagnosis status made by the physician, It was found that there was a significant difference according to the chronic disease states and the number of daily snacks ($p < 0.05$ and $p < 0.001$, respectively).

Conclusions: When the relationship between the scales was examined, a significant correlation was found between the WSSQ scores of obese individuals and their EES scores. It was found that there was a statistically significant effect of WSSQ scores on EES scores. It is thought that the findings of this study will contribute significantly to the relevant literature.

Keywords: Diet satisfaction, emotional eating, weight self-stigma, obesity

Obesity has been called various names throughout history, and being overweight in the past; While it was perceived as a symbol of power, fertility, and abundance, the importance of physical appearance in the workforce increased with the development of industry and technology, and overweight and obese individuals in the society were perceived as bulky, problematic, slow and unhealthy individuals. Today, however; Obesity is perceived as a chronic, progressive disease that cannot be prevented, affecting indi-

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viduals both psychologically and physiologically, due to the additional diseases and social problems it imposes on the person [1].

Emotional eating was first discussed within the scope of Bulimia Nervosa and seen as a trigger for it, and then it was considered as a concept on its own [2]. Emotional eating was first defined in 1950 and it has been defined as the behavior of eating more than normal given to negative and disturbing emotions [3]. There are many explanations for emotional eating. Emotional eating is a tendency to overeat in response to negative emotions [4]. Eating behavior that takes place to cope with uncomfortable emotions without feeling physical hunger has been defined as emotional eating [5]. In addition, the behavior of eating to escape from the disturbing feeling of the person despite not being physically hungry can be defined as emotional eating [6]. According to another definition, emotional eating is a behavior that occurs in response to the emotions felt by the person [7].

The concept of stigma is generally used in the sense of "black mark", which comes from the Greek word "stigma". In psychology, the exclusion of the individual from society, being seen as a shame or a black mark as it is used in general, can be considered as a reflection of my dislike by other people [8]. This concept, which was used for the first time in the scientific field by Goffman, is “less valued; less desirable and almost not perceived as human” and the stigmatized individual is defined as “not accepted in society, excluded” [9]. The concept of stigma shows a multidimensional structure feature that is defined, and measured in many ways, causing hesitations to prove it. It is stated that there are many aspects defined according to the state of experience [10], and it has consequences that affect not only the mental health of the individual but also the physical health [11].

When we look at the effects of self-stigma on the individual, it can be stated that the levels of self-esteem and self-efficacy decrease in the individual, and as a result, they exhibit negative attitudes and behaviors such as the inability to participate in society [12]. And this situation results in isolation, unemployment, and insufficient economic earnings. As a result, people who stigmatize themselves often feel and think that they are bad, weak, inferior, and incapable of accessing resources that are accessible to others [13, 14].

When the literature is examined, no research has been found on obese individuals in Turkey on weight self-stigma and emotional eating and diet satisfaction. This study aimed to investigate the relationship between weight and self-stigma, emotional eating, and diet satisfaction in obese individuals on diet.

METHODS

This cross-sectional study was conducted with an obese individual who applied to a diet clinic between August and September 2022 and continued diet counseling for at least 1 month. 145 obese individuals were included in the study. Before the study was conducted, approval was obtained from the Istanbul Okan University Ethics Committee (decision date: August 24, 2022, decision number: 2022-14). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Individuals between the ages of 18-65, who had been on a diet for at least 1 month and were obese, were included in the study voluntarily. Data collection was done face-to-face by the researcher. The personal information form was prepared by the researcher to measure the socio-demographic characteristics of individuals. While preparing the form questions, a conscious approach was adopted by considering the current literature information on the subject. In this form, There were 15 questions about the participant's age, gender, educational status, marital status, socioeconomic status, employment status, height, weight, psychiatric diagnosis status, presence of psychiatric medication used, presence of chronic disease, cigarette consumption, alcohol consumption status, nutritional status, and weight perceptions.

The Turkish Emotional Eating Scale (EES) used in the study was developed by Sinem Bilgen and its validity and reliability study was carried out with 96 people [15]. The internal consistency of the EES was found to be Cronbach's Alpha r = 0.960 at the first stage, r = 0.962 at the second stage, and r = 0.959 at the third stage. It was carried out methodologically to examine the reliability and validity of the Weight Self-stigma Questionnaire (WSSQ)for Turkish society. It has been determined that the Turkish version of the WSSQ includes the same sub-dimensions as the original 12-item form, and its validity-reliability results are at an acceptable level [16]. The scale, originally called “Diet Satisfaction Score”, was developed by

Jospe *et al*. [17]. The scale includes 5-point Likert-type response options ranging from 1 (strongly disagree) to 5 (strongly agree) and consists of 10 items. Turkish validity and reliability of the scale were done by Eskici and Karahan-Yılmaz [18]. The Cronbach Alpha coefficient of the nine-item scale was found to be 0.902. Body weight of each participant was measured using a calibrated electronic scale with an accuracy of 0.1 kg (TANITA) and body height was measured by a researcher using a tape measure. BMI was calculated using the formula [weight (kg)/height(m^2)].

Statistical Analysis

Descriptive statistics for categorical variables (demographic characteristics) are presented as frequency and percentage. The conformity of the numerical variables to the normal distribution was checked with the "Shapiro-Wilk Test". The descriptive statistics of numerical variables were given as mean ± standard deviation for data showing normal distribution, and median (min-max) values for data not showing normal distribution. The "Mann-Whitney U Test" was used for the comparison of two independent groups that did not have a normal distribution, and the "Kruskal-Wallis H Test" was used for the comparison of more than two groups. The results of the multiple comparison tests are expressed as letters next to the medians. Examination of the relationships between the scales was determined by "Spearman's Rank Differences Correlation Coefficient". In the interpretation of the correlation coefficient, "very weak correlation if < 0.2", "weak correlation between 0.2-0.4", "moderate correlation between 0.4-0.6" and "0.6- If it is between 0.8, high correlation" criteria, "0.8 > very high correlation" criteria were used. "Regression Analysis" was used to test the effect between variables. Regression analysis is the explanation of the relationship between two related variables, a dependent variable and an independent variable, with mathematical equivalence. "Cronbach's Alpha Coefficient" was calculated to determine the reliability level of the scales studied. In all calculations and interpretations, the statistical significance level was considered as "$p < 0.05$, $p < 0.01$, $p < 0.001$". Statistical analysis of the data was performed with the SPSS v26 statistical package program.

Table 1. Descriptive statistics of demographic findings of individuals

	Data
Gender, n (%)	
Men	56 (38.6)
Women	89 (61.4)
Age (years)	40.30 ± 12.34
Height (cm)	166.59 ± 9.72
Weight (kg)	95.68 ± 15.22
BMI (kg/m^2)	34.33 ± 3,12
Education Level, n (%)	
Primary school	11 (7.6)
Secondary school	16 (11.0)
High school	44 (30.3)
Graduate	59 (40.7)
Postgraduate	15 (10.3)
Marital Status, n (%)	
Married	99 (68.3)
Single	46 (31.7)
Employment Status, n (%)	
Employed	87 (60.0)
Not employed	58 (40.0)
TOTAL, n (%)	145 (100)

Data are shown as mean ± standard deviation or n (%). BMI = Body Mass Index

RESULTS

The demographic findings of the dieting obese individuals participating in the study are given in Table 1. When the descriptive statistics of the demographic findings of the obese individuals who participated in the study were examined, it was seen that 38.6% (n = 56) were male and 61.4% (n = 89) were women, and their mean age was 40.30 ± 12.34 years. According to their education level, 7.6% (n = 11) are primary school graduates, 11% (n = 16) are secondary school graduates, 30.3% (n = 44) are high school graduates, 40.7% (n = 59) are) are university graduates and 10.3% (n = 15) are postgraduate graduates, 68.3% (n = 9) are married and 31.7% (n = 46) are single according to their marital status, according to their income status % 13.1% (n = 19) have less than their income, 35.2% (n = 51) have income equal to their expenses and 51.7%

(n = 75) have more than their expenses, 60% (n = 87) according to their working status were working and 40% (n = 58) were not working (Table 1).

A comparison of EES scores of individuals on diet according to BMI groups and genders is given in Table 2. According to the results of the analysis, it was found that there was no statistically significant difference ($p > 0.05$) in all sub-factors and "EES Total" scores of the scale. When the results are examined, the median of women (42 [22-55]) in the "Eating in Tensions" score, compared to the men (40.5 [21-52]), the women's (41 [20-50]) in the "Eating to Cope with Negative Emotions" score] median compared to men (36 [13-50]), median for men [20 [21-30]) in "Self-Control" score, than women (18 [10-309) and women [115] in "TFLQ Total" score (115 [60-150]) was sta-

Table 2. Comparison of Turkish Emotional Eating Scale scores according to gender and BMI classification of obese individuals

	Sex	Mean ± SD	Median (min-max)	*p* value
EST	Men	38.37 ± 9.00	40.5 (21-52)	**0.038***
	Women	42.0 ± 76.97	42.0 (22-55)	
ECNE	Men	34.0 ± 49.29	36.0 (13-50)	**< 0.001*****
	Women	40.0 ± 46.67	41.0 (20-50)	
SC	Men	20.5 ± 4.21	20.0 (12-30)	**0.016***
	Women	19.0 ± 43.55	18.0 (10-30)	
CAS	Men	11.9 ± 12.29	13.0 (6-15)	0.088
	Women	12.6 ± 11.97	13.0 (6-15)	
EES-T	Men	104.8 ± 221.74	107.5 (60-146)	**0.025***
	Women	113.7 ± 615.44	115 (60-150)	
BMI Classification				
EST	Class 1	40.3 ± 8.05	42.0 (21-55)	0.107
	Class 2	42.1 ± 27.75	43.0 (26-55)	
	Class 3	36.1 ± 77.68	37.0 (25-46)	
ECNE	Class 1	37.5 ± 8.72	39.0 (13-50)	0.731
	Class 2	38.5 ± 97.34	40.0 (20-50)	
	Class 3	35.5 ± 7.74	36.0 (24-44)	
SC	Class 1	19.0 ± 93.70	18.0 (10-30)	0.066
	Class 2	20.7 ± 64.19	20.0 (13-30)	
	Class 3	20.1 ± 73.06	19.0 (18-26)	
CAS	Class 1	12.2 ± 22.29	13.0 (6-15)	0.773
	Class 2	12.5 ± 41.67	13.0 (9-15)	
	Class 3	12.9 ± 32.23	13.0 (9-15)	
EES-T	Class 1	109.1 ± 119.12	114 (60-150)	0.377
	Class 2	114.0 ± 17.13	116 (81-150)	
	Class 3	104.6 ± 718.12	105 (80-129)	

EST = Eating in Situations of Tension, ECNE = Eating to Cope with Negative Emotions, SC = Self-Control, CAS = Control Against Stimulus, EES-T = Emotional Eating Scale Total, BM = Body Mass Index, SD = Standard Deviation
Mann-Whitney U Test, *$p < 0.05$; ***$p < 0.001$

tistically higher than men (107.5 [60-146]).

Summary statistics of the individuals' EES, WSSQ, and DSS scores are given in Table 3. When the descriptive statistical values of the Turkish Emotional Eating Scale (EES) scores were examined, it was found that the "Eating in Tensions" sub-dimension had a value between the lowest 21.0 and the highest 55.0, and the average was 40.64 ± 7.99, "For Coping with Negative Emotions". The "Eating" sub-dimension had a value between 13.0-50.0 and the average was 37.72 ± 8.29, and the "Self-Control" sub-dimension had a value between 10.0-30.0 and the average was 19.61 ± 3.87. "Control Against Stimulus" sub-dimension took values between 6.0-15.0 and its average was 12.34 ± 2.12. On the other hand, in the "EES Total" score, it was found that the value was between the lowest 60.0 and the highest 150.0, and its average was 110.31 ± 18.58. When the descriptive statistical values of the Weight-Related Self-Stigmatization Scale (CIBS) scores were examined, the "Self-Devaluation" sub-dimension had a value between the lowest 8.0 and the highest 30.0, and the average was 22.27 ± 4.92, and the "Fear of Stigma" sub-dimension. It is seen that the value is between 8.0-30.0 and the mean is 21.03 ± 5.39. On the other hand, it was found that the value between the lowest 18.0 and the highest 60.0 in the "WSSQS Total" score was 43.30 ± 9.52. When the descriptive statistical values of the Diet Satisfaction Scale (DSS) scores were analyzed, it was found that the "DSS Total" score ranged from the smallest 13.0 to the highest 42.0, with a mean of 32.10 ± 5.57 (Table 4).

The correlation coefficients between the sub-factor and total scores of the Turkish Emotional Eating Inventory (EES), the Weight-Related Self-Stigmatization Scale (FAIS), and the Diet Satisfaction Scale (DSS) are given in Table 4. There was a significant positive correlation between the "Self-Devaulation" sub-dimension of the WSSQ and the "Eating in Situations of Tension", "Eating to Cope with Negative Emotions" and total EES scores (respectively, r = ; $p < 0.001$, r = 0.421; $p < 0.001$, r = 0.425; $p < 0.001$). When the results are analyzed, the "Self-Devaluation" scores of the EES increase, the "Eating in Stress Situations" scores of EES increase by 38.8%, "Eating to Cope with Negative Emotions" scores increase by 42.1%, and the "EES Total" scores increase by 38.8%. It was found that there was a 42.5% increase in their scores (Table 4).

There was a positive significant correlation between the "Fear of Stigma" sub-dimension of the WSSQ and the "Eating in Situations of Tension", "Eating to Cope with Negative Emotions", "Control Against Stimulus" and total EES scores (respectively, r = 0.462; $p < 0.001$, r = 0.531, $p < 0.001$, r = 0.307, $p < 0.001$, r = 0.514, $p < 0.001$). When the results are examined, the "Fear of Stigma" scores of EES increase, a 46.2% increase in the "Eating in Tension Sit-

Table 3. Summary statistics of Emotional Eating Scale, Weight Self-Stigma Questionnaire and Diet Satisfaction Scale scores

	Min	Max	Mean	SD
Emotional Eating Scale (EES)				
Eating in Situations of Tension	21.00	55.00	40.64	7.99
Eating to Cope with Negative Emotions	13.00	50.00	37.72	8.29
Self-Control	10.00	30.00	19.61	3.87
Control Against Stimulus	6.00	15.00	12.34	2.12
EES Total	60.00	150.00	110.31	18.58
Weight Self-Stigma Questionnaire (WSSQ)				
Self-Devaluation	8.00	30.00	22.27	4.92
Fear of Stigma	8.00	30.00	21.03	5.39
WSSQ Toplam	18.00	60.00	43.30	9.52
Diet Satisfaction Scale (DSS)				
DSS Total	13.00	42.00	32.10	5.57

SD =standard deviation

uations" scores, a 53.1% increase in the "Eating to Cope with Negative Emotions" scores, and "Control Against Stimulus" scores increase by 46.2%. It was found that there was an increase of 30.7% in the scores of ” and an increase of 51.4% in the scores of “Total EES” (Table 4).

There was a positive significant correlation between WSSQ total score and all sub-dimensions and total score of EES ($p < 0.05$). When the results are examined, it is seen that as the “FASS Total” scores of the EES increase, the “Eating in Tension Situations” scores increase by 45.6%, the “Eating to Cope with Negative Emotions” scores increase by 51.7%, and the “Control Against Stimulus” scores increase by 45.6%. It was found that there was an increase of 25.5% in the scores of ” and an increase of 50.4% in the scores of “Total EES” (Table 4).

A statistically significant negative weak correlation was found between DSS total score and EES subdimensions "Eating in Tension Situations" and "Eating to Cope with Negative Emotions" and "Control Against Stimulus" (respectively, (r = -0.191; $p < 0.05$). , r = -0.221; $p < 0.01$, r = 0.220; $p < 0.01$) However, there was a weak positive correlation between DSS total score and Self-Control subscale of EES (r = 0.220, $p < 0.01$). When the results are examined, as the DSS total scores increase, there is a 19.1% decrease in the "Eating in Tension Situations" scores, a 22.1% decrease in the "Eating to Cope with Negative Emotions" scores, and a 22.1% decrease in the "Eating in Stress Situations" scores. It was found that there was a 22% increase in the ” scores and a 22% decrease in the “Control Against Stimulus” scores (Table 4).

DISCUSSION

In the study, 145 dieting obese individuals were studied and the primary purpose of the study was to examine the relationship between self-stigmatization, emotional eating, and diet satisfaction in dieting obese individuals and to eliminate the deficiency in this field in the literature.

In the study, the comparison of the scores of the EES was examined and as a result, there was a statistically significant difference between the EES scores of the obese individuals on a diet according to their gender and income status, age groups, educational status, marital status, employment status. Akduman [19], in his study examining the relationship between prob-

Table 4. Examination of the relationship between the scores of the Turkish Emotional Eating Scale, the Weight Self-Stigma Scale, and the Diet Satisfaction Scale

		WSSQ-1	WSSQ-2	WSSQ-T	DSS-T
EST	**r**	0.388	0.462	0.456	-0.191
	***p* value**	**< 0.001*** **	**< 0.001*** **	**< 0.001*** **	**0.021***
ECNE	**r**	0.421	0.531	0.517	-0.221
	***p* value**	**< 0.001*** **	**< 0.001*** **	**< 0.001*** **	**0.008****
SC	**r**	0,030	-0,012	0,003	0.220
	***p* value**	0.720	0.887	0.972	**0.008****
CAS	**r**	0.158	0.307	0.255	-0.220
	***p* value**	0.058	**< 0.001*** **	**0.002****	**0.008****
EES-T	**r**	0.425	0.514	0.504	-0.141
	***p* value**	**< 0.001*** **	**< 0.001*** **	**< 0.001*** **	0.090

EST = Eating in Situations of Tension, ECNE = Eating to Cope with Negative Emotions, SC =: Self-Control, CAS = Control Against Stimulus, EES-T = Emotional Eating Scale Total, WSSQ-1 = Self-Devaluation, WSSQ-2 = Fear of Stigma, WSSQ-T = Weight Self-Stigma Questionnaire Total, DSS-T = Diet Satisfaction Scale Total, r = Spearman's Rank Differences Correlation Coefficient

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

lematic eating behaviors and childhood traumas in obese individuals, stated that there is a significant difference between the emotional eating scores of obese individuals according to their gender and employment status, but there is no significant difference between emotional eating scores according to their income status. Cihan [20], in his study examining the relationship between the feeling of stigma, eating behaviors, and depression in obese individuals, stated that there is a significant difference between the emotional eating scores of obese individuals according to their gender, but there is no significant difference according to their marital status, educational status, and BMI groups. Yaşar [21], in his study examining the relationship between self-stigma and emotional eating in obese individuals, found that there was a significant difference between the emotional eating scores of obese individuals according to their employment status and the psychiatric diagnosis received by the physician, and there was a significant difference between their emotional eating scores according to their gender, marital status, and socioeconomic status. Şen and Kabaran [22], in their study examining the effects of nutritional status and emotional eating, night eating, and sleep quality, stated that there was no significant difference between the emotional eating scores of individuals according to their gender, but there was a significant difference between emotional eating scores according to BMI groups. In this study, the comparison of the scores of the WSSQ was examined, and as a result, there was a statistically significant difference between the WSSQ scores of the obese individuals on a diet according to their gender and employment status, age groups, educational status, marital status, income status, BMI groups. It was found that there was no statistically significant difference between WSSQ scores according to psychological diagnoses, psychiatric drug use, chronic disease, smoking, alcohol consumption, daily main meals, daily snacks, and body assessment. Lillis *et al*. [16], in their study in which they examined the self-stigmatization status of individuals according to their weight, stated that there was a significant difference between self-stigmatization scores related to weight compared to individuals who were diagnosed with a psychiatric diagnosis by a physician. Hain *et al*. [23], in their study in which they examined the German version of the weight-related self-stigma scale, stated that there was no significant difference between the weight-related self-stigma scores of individuals according to BMI groups. Lin and Lee [24], in their study in which they examined the Chinese version of the weight-related self-stigma scale, stated that there was a significant difference between individuals' self-stigmatization scores regarding weight according to BMI groups and that as individuals' BMI increased, their weight-related self-stigmatization scores increased. Güzin *et al*. [25], in their study in which they examined the Turkish version of the weight-related self-stigma scale, stated that there was a significant difference between individuals' self-evaluation scores regarding weight according to BMI groups and that self-stigmatization scores related to weight increased as BMIs increased.

In this study, the comparison of the DSS scores was examined, and as a result, there was a statistically significant difference between the DSS scores of obese individuals on a diet according to their income status, psychiatric diagnosis made by the physician, chronic disease status and the number of daily snacks. It was found that there was no significant difference between DSS scores according to education status, marital status, employment status, BMI groups, psychiatric drug use status, smoking consumption status, alcohol consumption status, number of daily main meals, and body evaluation status. When the literature was examined, Hata *et al*. [26] stated that there was a significant difference between the dietary satisfaction scores of men according to age groups in their study in which they examined the composite relationship of social participation and support with personal health and diet satisfaction in men with spinal cord injury. Jospe *et al*. [17] stated that there was a significant difference between the diet satisfaction scores of individuals according to their gender and age, in their study where they developed and pre-validated the diet satisfaction score to evaluate diet satisfaction. Mioba and Ogada [27], examined the factors related to diet satisfaction in adult surgical orthopedic patients hospitalized in a teaching hospital in Lusaka, Zambia, and stated that there was no significant difference in diet satisfaction scores according to age groups, gender, education, and marital status of patients.

In this study, it was found that there was a significant positive correlation between Weight-Related Self

Stigma scores and emotional eating scores, but there was no significant correlation between diet satisfaction scores. When the literature was reviewed, Cihan [20], in his study examining the relationship between the feeling of stigma, eating behaviors, and depression in obese individuals, stated that there was a significant positive correlation between the self-stigmatization scores of obese individuals and their emotional eating scores. In his study, Yaşar [21], examined the relationship between self-stigma and emotional eating in obese individuals, it was determined that there was a significant positive correlation between the Self-Stigma Related to Weight and emotional eating scores of obese individuals. In this study, it was found that self-stigmatization scores related to weight had a positive effect on emotional eating scores, but did not have a significant effect on diet satisfaction scores.

CONCLUSION

When the results of the study conducted to examine the relationship between self-stigma in dieting obese individuals and emotional eating and dietary satisfaction were examined, it was observed that the scores of the EES were determined according to the gender and income status of the obese individuals, and WSSQ It has been found that there is a statistically significant difference between the scores of the obese individuals according to their gender and working status, and the DSS scores according to the income status of the obese individuals, their psychological diagnosis status by the physician, their chronic disease status and their daily snack consumption status. As a result of examining the effect of WSSQ scores on the EES and DSS scores, it was found that the WSSQ scores were compared to the EES scores. It was found that there was a statistically significant effect on the EES scores, but not on the DSS scores. Obese individuals should be given psychological information about self-stigmatization, the severity of emotional eating should be monitored and necessary precautions should be taken.

Authors' Contribution

Study Conception: NBD, SA; Study Design: NBD, SA; Supervision: NBD, SA; Funding: NBD, SA; Materials: NBD, SA; Data Collection and/or Processing: NBD, SA; Statistical Analysis and/or Data Interpretation: NBD, SA; Literature Review: NBD, SA; Manuscript Preparation: NBD, SA and Critical Review: NBD, SA.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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