Middle Black Sea Journal of Health Science / Mid Blac Sea J Health Sci **August 2022; 8(3): 458-468**

RESEARCH ARTICLE **DOI:** 10.19127/mbsjohs.1112504

Temperament, Character, Personality Characteristics and Eating Attitudes of People Seeking Bariatric Surgery

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Received: 09 May 2022, Accepted: 03 July 2022, Published online: 31 August 2022

Abstract

Objective: This study aimed to analyze differences in temperament, character, personality characteristics and eating attitudes between the patients seeking bariatric surgery for the treatment of obesity and the general population.

Methods: The candidates for bariatric surgery were assessed pre-operatively using the Temperament-Character Inventory (TCI) and Personality Belief Questionnaire (PBQ) for personality characteristics, and the Eating Attitudes Test (EAT) for their eating behavior.

Results: The candidates for bariatric surgery had higher scores on the Impulsivity and Compassionate sub-dimensions of the TCI, whilst the score on the Self sub-dimension was lower than in the controls. No significant differences were found between patients and controls in the subscales of the Personality Belief Questionnaire. The candidates for bariatric surgery were found to have more impaired eating habits.

Conclusion: This study demonstrates that certain personality characteristics may both cause obesity and may be effective in the treatment method used to treat obesity. Taking into account the personality characteristics of patients and assessing their eating patterns when determining therapeutic approaches to obesity, including bariatric surgery, may be beneficial in achieving effective, long-term results in weight control. In patients scheduled for bariatric surgery for the treatment of obesity, providing individualized psychiatric support to develop their impulsivity-related self-control skills may enhance the success of obesity treatment.

Key words: Obesity, Bariatric Surgery, Temperament, Character, Personality, Eating Attitudes

Suggested Citation: Aras N Kahraman I, Yilmaz H, Ustaoglu M. Temperament, Character, Personality Characteristics and Eating Attitudes of People Seeking Bariatric Surgery. Mid Blac Sea Journal of Health Sci, 2022;8(3): 458-468.

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INTRODUCTION

Obesity, which is now a major health problem worldwide, is a complex and chronic disease in which genetic and environmental risk factors are involved (1). According to the World Health Organization (WHO) statistics, 39% (1.9 billion) of adults aged over 18 are overweight and 13% (650 million) are obese (2). The combination of psychological intervention, physical exercise and dietary strategies is proving to be effective in helping people with obesity, the prevalence of which is increasing at an alarming rate, to lose weight.

Personality consists of habitual patterns of behavior, thought and emotion that are unique to the individual and remains relatively stable over time (3). Temperament and character constitute the two core components of personality as well as the end product of the interaction between these two components and influence eating behavior and the outcomes of obesity treatment (4).

Obese and overweight individuals have been found to differ from the normal population in terms of personality traits (5). Personality characteristics may play a key role as both a risk factor and a protective factor in the development of excess weight and obesity (6). It is further reported that there is a relationship between the eating patterns and disorders and the personality characteristics. It is therefore argued that personality characteristics may affect the outcomes of weight management interventions (3,5).

Nowadays, surgery is recommended and widely performed as the most effective treatment option for obesity (6-8). Bariatric surgery is being hailed as the most effective treatment for morbid obesity, which has become popular worldwide and provides significant and permanent long-term weight loss compared to other treatment methods (diet, cognitive behavioral therapy, medication, exercise) (1,9,10). Studies examining the personality characteristics of obese patients who underwent bariatric surgery have shown that certain personality characteristics can be predictive of short- and long-term success in obesity treatment (3,11,12).

The studies about bariatric surgery show that certain groups of patients face difficulties in changing their lifestyle and eating attitudes after bariatric surgery, so they usually put on weight for some time after the operation (1). It is also reported that although there is a significant improvement in quality of life after bariatric surgery, some psychological problems may develop in the long term (1). It is recommended that new strategies be developed for selecting and monitoring patients based on psychological factors for bariatric surgery (9). Therefore, for the treatment of obesity, it has become important to determine the personality characteristics of those seeking treatment through invasive interventional methods such as bariatric surgery and to provide the necessary psychiatric interventions. This study was designed to analyze the personality characteristics, temperament and character, and eating attitudes of patients seeking bariatric surgery.

METHODS

Sample and Subjects

This study was performed at the Trabzon Kanuni Training and Research Hospital between May 2017 and July 2018 with patients who were scheduled to undergo bariatric surgery for the treatment of obesity. The study involved 76 patients aged 18 years and over, who were scheduled for bariatric surgery and agreed to participate in the study, and 71 controls. For the study, an ethics committee approval was obtained

from the Scientific Research Council of the Trabzon Kanuni Training and Research Hospital, on April 5, 2017 under number 2017/11.

The patients scheduled for bariatric surgery were assessed by a general surgeon, a psychiatrist and a specialist in endocrinology and metabolism. For this operation to be performed on patients, they must obtain confirmation from all three branches that they are fit for the procedure. The eligibility of patients for bariatric surgery was assessed on the basis of the updated criteria for 2013 set by the National Institute of Health (NIH) (13). According to NIH criteria, patients who are scheduled for bariatric surgery must be between the ages of 18 and 65, have a body mass index (BMI) ≥ 40 kg/m2 or a BMI of 35-40 kg/m2 with one or more comorbidities or a BMI of 30-35 kg/m2 plus diabetes or metabolic syndrome, have failed prior medical treatment for obesity, and have no untreated cancer or untreated substance abuse or psychiatric disorder (14). The study data were obtained during the preoperative psychiatric assessment of the patients.

Materials

For this study, the researchers created a socio-demographic data form including variables such as age, gender, education, height/weight, diet history of the subjects. Following a psychiatric assessment in the pre-operative period, the candidates for bariatric surgery were administered the Temperament-Character Inventory (TCI) and the Personality Belief Questionnaire (PBQ). Their eating patterns were assessed using the Eating Attitude Test. A control group was then formed from members of the general population who were compatible with the bariatric surgery patient group in terms of gender, age and education.

The body mass index (BMI), was used to define obesity. Accordingly, an individual was classified as thin when the BMI was <18.50, normal when the BMI was 18.50-24.99, overweight when the BMI was 25.0-29.99, grade 1 obese when the BMI was 30.0-34.99, grade 2 obese when the BMI was 35.0-39.99, and morbidly obese when the BMI was >40.0 (15).

The Temperament and Character Inventory (TCI) is a true-false scale developed to measure 7 dimensions of personality, consisting of 240 question items. Cloninger's psychobiological personality theory suggests that there are four different dimensions of temperament that are genetically independent of each other and invariant in terms of socio-cultural effects. These dimensions of temperament include Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence. Additionally, there are three different dimensions of character, Self-Management, Cooperation and Self-Transcendence, which affect the personal and social activity that matures in adulthood (16,17). Each dimension of the TCI has its own sub-dimensions. The Turkish validity and reliability study of the scale was conducted by Köse et al. in 2004 (18). The TCI is reported to be a useful tool for defining patient subgroups and determining personality characteristics in obesity. In recent years, it has gained widespread use in the examination of obesity (3).

The Personality Belief Questionnaire (PBQ) was first developed by Beck et al. for the Axis II disorders on the basis of cognitive theory and clinical observations. The questionnaire consists of schemas made up of specific beliefs and assumptions developed for the personality disorders. Those schemas correspond to 9 personality disorders in the

DSM-IV, Avoidant, Dependent, Passive-Aggressive, Obsessive-Compulsive, Antisocial, Narcissistic, Histrionic, Schizoid and Paranoid. It consists of 14 question items scoring from 0 to 4 (0: I don't believe at all, 4: I strongly believe) for each personality disorder and contains 126 items in total (19). The Turkish validity and reliability study of the original version of the PBQ was performed by Türkçapar et al. (20).

The Eating Attitude Test (EAT) was developed to assess patients with eating disorders (21). The Turkish validity and reliability study of the scale was conducted by Savaşır&Erol (22). The cut-off point of the test is 30 points. The test can be used as a screening tool in studying the risky eating attitudes (23).

Statistical Analysis

The data obtained were statistically analyzed using the SPSS 25.0 package program. The descriptive statistics were reported as mean ± standard deviation for continuous numerical variables. The categorical variables were presented as number of cases (n) and percentage (%). Whether there was a difference between the groups was assessed using an Independent Sample T-Test. $p<0.05$ was considered statistically significant.

RESULTS

Sociodemographic Characteristics

The patients seeking bariatric surgery for the treatment of obesity had a mean age of 36.9±1 and a mean BMI of 45.5±5 kg/m2. Of the patients, 76.3% were female, and 89.5% had been on a diet at least once to control their weight at some point in their lives. At the time of assessment, 36.8% had some type of physical illness and 25% had a psychiatric illness. Another 28.9% were receiving treatment for a past or present psychiatric disorder. No significant difference existed between the patient and control groups in terms of age and gender. Table 1 shows the sociodemographic characteristics of the patient and control groups.

Table 1. Comparison of sociodemographic characteristics in bariatric surgery candidates and controls.

	Seeking for bariatric surgery (n/%)	**Controls (n/%)**
Sex		
Male	18 (23.7)	17 (23.9)
Female	58 (76.3)	54 (76.1)
Age		
18-24	12 (15.8)	11 (15.5)
25-34	22 (28.9)	22 (31.0)
35-44	22 (28.9)	15 (21.1)
45-54	18 (23.7)	18 (25.4)
55-64	2 (2.6)	5 (7.0)
Education		
Primary school	25 (32.9)	13 (18.3)
High school	25 (32.9)	21 (29.6)
University	26 (34.2)	37 (52.1)
BMI*		
Underweight	-	3 (4.2)
Normal	-	28 (39.4)
Risk of obesity	-	29 (40.8)
Grade 1 (mild) obesity	-	7 (9.9)
Grade 2 (moderate) obesity	8 (10.5)	2 (2.8)
Morbid obesity	68 (89.5)	2 (2.8)
Age (Mean±SD, years)**	36.9±1	37.7±8
Mean BMI (kg/m^2)	45.5±5 (min35.7, max 59.5)	25.9±5 (min16.9, max 42.5)
Total	76 (100.0)	71 (100.0)

Data from the Temperament and Character Inventory

In the TCI of patients seeking bariatric surgery, the Impulsivity sub-dimension of the Novelty Seeking dimension and the Compassionate sub-dimension of the Cooperativeness dimension were found to be significantly higher than the patient group, whereas the Self-forgetfulness sub-dimension of the Self-Transcendence dimension was found to be significantly lower than the patient group ($p<0.05$). No significant difference was found between the TCI dimension and sub-dimension scores in terms of genders ($p>0.05$). Table 2 shows the TCI scores for the patient and control groups.

Table 2. Comparison of Temperament and Character Inventory scores in bariatric surgery candidates and controls.

TCI*	Dimensions	Seeking for bariatric surgery (n=76)	Controls (n=71)	p
		Mean± SD	Mean± SD	
	Novelty Seeking	17.9±4.3	17.0±3.9	0.6
	Exploratory	6.4±1.9	6.1±2.0	0.6
T	Impulsiveness	3.3±2.1	3.2±1.5	**0.03**
E	Extravagance	4.9±2.0	4.6±1.8	0.4
M	Disorderliness	3.3±1.5	3.2±1.6	0.6
P	**Harm avoidance**	14.3±5.3	17.3±6.2	0.4
E	Anticipatory worry	4.2±2.0	5.2±2.3	0.5
R	Fear of uncertainty	3.9±1.5	4.5±1.7	0.3
A	Shyness	2.5±2.1	3.6±2.1	0.9
M	Fatigability	3.7±2.0	4.0±2.3	0.5
E	**Reward dependence**	14.6±3.6	13.9±3.4	0.9
N	Sentimentality	7.2±1.8	6.7±2.2	0.1
T	Attachment	5.0±2.0	4.7±2.0	0.9
	Dependence	2.3±1.2	2.4±1.3	0.9
	Persistence	4.8±1.8	5.2±1.6	0.3
	Self-directedness	31.2±6.2	31.0±6.0	0.9
	Responsibility	5.8±1.9	5.7±1.8	0.8
	Purposefulness	5.8±1.2	5.8±1.4	0.1
	Resourcefulness	3.7±1.1	3.7±1.2	0.8
C	Self-acceptance	6.7±2.6	6.7±2.8	0.9
H	Congruentness	9.1±1.9	9.3±1.8	0.9
A	**Cooperativeness**	32.5±4.5	30.4±4.7	0.5
R	Social acceptance	6.7±1.5	6.4±1.4	0.9
A	Empathy	4.8±1.4	4.6±1.3	0.4
C	Helpfulness	4.9±1.1	4.9±1.3	0.4
T	Compassionate	8.7±1.7	7.3±2.6	**0.001**
E	Purehearted	7.3±1.1	7.2±1.2	0.6
R	**Self-transcendence**	18.2±5.2	18.4±5.2	0.6
	Self-forgetfulness	5.2±2.5	5.9±2.0	**0.005**
	Transpersonal identification	5.5±1.9	5.3±2.0	0.6
	Spiritual acceptance	7.5±2.8	7.2±2.7	0.4
	Other Total	7.0±1.8	6.8±1.6	0.8
	TOTAL	140.3±11.8	139.6±10.6	0.3

*TCI: Temperament and Character Inventory
Note: Significant differences are marked in bold type.

Data from Personality Belief Questionnaire

No significant differences were found in the PBQ subscales between patients seeking bariatric surgery and the control group ($p>0.05$). Also, there was no significant difference between the PBQ subscales in terms of gender ($p>0.05$). Table 3 presents the data from PBQ.

Table 3. Comparison of Personality Belief Questionnairescores in bariatric surgery candidates and controls.

PBQ* Subscales	Seeking for bariatric surgery (n=76)	Controls (n=71)	T test, domain and effect size				
	Mean±SD	Mean±SD	p	t	df	Cohen's d	r
Avoidant	13.3±5.5	13.4±5.6	0.85	-0.14	145	-0.02	-0.01
Dependent	7.6±5.1	7.5±5.1	0.98	0.10	145	0.02	0.01
Passive-agressive	13.4±5.6	13.4±5.7	0.90	0.03	145	0.01	0.00
Obsessive-compulsive	13.6±5.5	13.8±5.5	0.83	-0.30	145	-0.05	-0.02
Antisocial	9.8±6.6	9.9±6.6	0.92	-0.08	145	-0.01	-0.01
Narcissistic	8.7±4.8	8.8±4.9	0.87	-0.06	145	-0.01	-0.01
Histrionic	6.1±4.6	6.0±4.6	0.85	0.05	145	0.01	0.00
Schizoid	12.8±5.9	12.9±5.9	0.99	-0.08	145	-0.01	-0.01
Paranoid	11.8±6.5	11.7±6.6	0.82	0.12	145	0.02	0.01

*PBQ: Personality Belief Questionnaire

Results of the Eating Attitude Test

In 10.5% (n=8) of patients seeking bariatric surgery and 5.6% (n=4) of the control group, eating disorders were detected. The mean EAT score was 18.3±8 (min 4, max 37) in the candidates for bariatric surgery, and 13.1±8 (min 1, max 39) in the control group. Although mean EAT scores were higher in the candidates for bariatric surgery, there was no statistically significant difference between the two groups (p>0.05). No significant difference was found between the genders in the EAT scores (p>0.05). Table 4 presents the data from the EAT.

Table 4: Comparison of Personality Eating Attitude Test scores in bariatric surgery candidates and controls.

EAT*	Seeking for bariatric surgery (n=76)	Controls (n=71)	T test, domain and effect size				
EAT-mean	18.3±9	13.1±8	p	t	df	Cohen's d	r
EAT- impaired eating attitude	% 10.5	% 5.6	0.2	3.7	145	0.6	0.3
Total	76	71					

*EAT: Eating Attitude Test

DISCUSSION

Sociodemographic data

The majority of patients (76.3%) seeking bariatric surgery for the treatment of obesity in our study were female. The patients had a mean age of 36.9±1 years and a mean BMI of 45.5±5 kg/m2. In a study involving women seeking treatment for obesity, patients were found to have an average age of 48 years and an average BMI of 37.8 kg/m2 (3). Another study conducted with a large population of bariatric surgery patients found that the patients, 84.7% of whom were female, had a mean age of 35 years and a mean BMI of 43.3 kg/m2 (9). In a similar study, the patients seeking bariatric surgery, the majority of whom were female, were reported to have a mean age of about 36 years, and a mean BMI of about 46 kg/m2 (1). In another study conducted in Turkey with candidates for bariatric surgery, the patients, 80.6% of whom were female, were reported to have a mean age of 37.5 years, and a mean BMI of about 45 kg/m2, which is similar to our study (10). The data we obtained are consistent with those from similar studies.

In our study, 36.8% of the patients seeking bariatric surgery had any physical condition at the time of assessment, 14.5% had any psychiatric condition in the past, and 25% had any psychiatric diagnosis at the time of assessment. The prevalence of comorbid medical and psychiatric illnesses is reported to be high in individuals assessed prior to

bariatric surgery (10). In Turkey, the rate of lifetime psychiatric disorders in candidates for bariatric surgery was reported to be around 39% to 56%, whilst the rate of comorbid physical diseases was reported to be around 44% to 64% (10,24). In light of the data we obtained, there are some differences in rates of psychiatric disorders and physical diseases in bariatric surgery candidates from previous studies. This may be due to being effective in different factors in leading patients to seek bariatric surgery (such as amelioration of comorbid conditions such as diabetes caused by obesity or aesthetic concerns that may be associated with psychiatric diseases).

Scores from the Temperament-Character Inventory

Our study found that scores on the Impulsivity sub-dimension of the Novelty Seeking dimension of the TCI were significantly higher in candidates for bariatric surgery. The most consistent finding in studies examining obesity is that impulsivity is a risk factor for obesity (6). Impulsivity refers to the lack of the ability to inhibit automatic behavior (25). Those with a high impulsivity score are people who make quick decisions, who are unable to control their impulses and who are agitated. They usually act on their instincts and intuitions (26). Impulsivity plays a crucial role in the emergence and continuation of binge eating patterns. Individuals with a high level of impulsivity tend to eat in a more unhealthy way. Impulsivity may therefore contribute to the excessive weight gain that occurs in obesity and affect the outcomes of bariatric surgery (25,27).

Morbidly obese individuals were found to have high scores on the impulsivity subscale (28). Eating behavior acts as an emotion stabilizer that helps to correct negative moods in stressful situations (10). Both emotional eating and uncontrolled eating, which are common among obese people, can be regarded as a reflection of the impulsivity in these individuals (10). Impulsiviness scores are reported to be high, especially in people who seek bariatric surgery for the treatment of obesity. Yet, it is reported that impulsivity adversely affects the outcomes of bariatric surgery (25). Our study found that Impulsiviness scores were elevated in those seeking bariatric surgery, which is in parallel to the literature. Impulsivity may also be a factor that leads people to choose bariatric surgery for the treatment of obesity.

The Compassionate sub-dimension of the Cooperativeness dimension of the TCI was found to be significantly higher in patients seeking bariatric surgery in this study. Those who score high on this subscale are described as compassionate, forgiving, charitable and generous individuals. These individuals do not like to take revenge and generally try not to hold grudges, even if they are treated very badly (26). Compassionate for others has not been sufficiently researched in terms of dietary habits and weight loss. It is argued, however, that compassion may help people with obesity to better cope with the social stigma induced by the condition (29). Given that the people seeking bariatric surgery in our study were mostly morbidly obese, it is possible that high levels of compassion may have prevented these individuals from being affected by the stigma of obesity during their weight gain, and thus from seeking obesity treatment in the early stages, leading to a gradual increase in weight to morbidly obese levels.

No significant differences were found in the Harm Avoidance, Reward Dependence, Persistence and Self-Management dimensions of the TCI and the sub-

dimensions thereof in patients seeking bariatric surgery. The results of studies on the personality characteristics of people suffering from obesity or candidates for bariatric surgery show certain differences. There is evidence that several different assessment tools (such as the MMPI, the Five-Factor Personality Scale or the Temperament Character Inventory, etc.) are used in studies (6). There are also inconsistencies in the results of studies using the TCI (1,8,9,30). Although personality characteristics have an impact on weight changes throughout the life course, what factors lead individuals to different treatment options, including personality characteristics for the treatment of obesity, remains unclear. Therefore, there might not be a significant difference in the scores of the other dimensions and sub-dimensions of the TCI in patients seeking bariatric surgery.

Scores from the Personality Belief Questionnaire

In this study, no differences were found in any of the PBQ subscales in those seeking bariatric surgery. Cluster C disorders, such as avoidant, anxious, dependent and obsessive-compulsive personality disorders, and especially borderline personality disorder, are reported to be more common than cluster B personality disorders in candidates for bariatric surgery (31,32). Owing to the small sample size, sufficient data to reflect personality characteristics could not be obtained in this study.

Scores from the Eating Attitude Test

Our study found that the mean EAT score of patients seeking bariatric surgery was 18.3 and the rate of eating disorders was 10.5%. The studies with candidates for bariatric surgery revealed that the average EAT scores ranged from about 21 to 24 and that the rate of problematic eating behavior ranged from 23% to 35% (10,24,33). That the mean EAT score in our study was lower than those reported in previous studies may be due to the fact that patients were concerned about this issue due to the assessment of their suitability for bariatric surgery and wanted to masquerade as being more moderate in their eating behavior.

CONCLUSIONS

Our study found that people who seek bariatric surgery for obesity treatment have higher levels of impulsivity and are more compassionate individuals. With regard to emotional eating, impulsivity can lead to weight gain and a predisposition to obesity, as well as causing people to resort to riskier methods such as surgery to treat obesity.

Obesity is a multi-systemic disorder, in the development of which genetic, social, cultural and dietary factors as well as psychiatric components are involved. The personality-related factors are effective both in the process leading to obesity and in the treatment thereof. Therefore, particularly in cases where riskier treatment methods such as surgery are to be applied, considering differences in patients' personality characteristics would facilitate adherence to the treatment process and yield effective and long-term results in terms of weight control.

There are some limitations in our study. First, the reasons why patients prefer bariatric surgery for the treatment of obesity have not been investigated. Second, the psychiatric evaluation of the patients was made just before the surgery. Therefore, they may have tried to make themselves look better than they are, to be approved for bariatric surgery.

This study shows that it may be useful to assess personality characteristics and eating behaviors in the course of a psychiatric evaluation to determine

therapeutic approaches to obesity. In the psychiatric assessment prior to bariatric surgery, it may be advantageous to consider personality characteristics and to define patient subgroups, as obesity may affect the long-term success of the treatment. Providing an individualized psychiatric treatment program to develop and strengthen self-control skills in patients scheduled for bariatric surgery for obesity treatment may increase the success of the treatment.

Ethics Committee Approval: For the study, an ethics committee approval was obtained from the Scientific Research Council of the Trabzon Kanuni Training and Research Hospital, on April 5, 2017, under number 2017/11.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept: N.A, Design: A.K.S, A.U, Literature search: A.K.S, A.U, Data Collection and Processing; N.A, H.Y, I K, Analysis and Interpretation – N.A, H,Y, Writing. N.A, M.U.

Conflict of Interest: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Financial Disclosure: The author declared that this study hasn't received no financial support.

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