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Relationship Between Psychological Symptoms and Self-Esteem Levels Before and After Stomach Botox Treatment

Authors' Contribution:

Study Design A

Data Collection B

Statistical Analysis C

Data Interpretation D

Manuscript Preparation E

Literature Search F

Funds Collection G

ABCDEF 1 Çetin Altunal ABCDEF 2 İbrahim Tayfun Şahiner 

1 Department of Perfusion Techniques, Nişantaşı University, Istanbul, Turkey

2 Department of General Surgery, Hitit University School of Medicine, Çorum, Turkey

Corresponding Author: İbrahim Tayfun Şahiner, e-mail: tayfunsahiner@hitit.edu.tr**Financial support:** None declared**Conflict of interest:** None declared

Background: Obesity is an exponentially increasing public health problem all over the world. When obesity is treated, many healing states begin to occur in obese individuals. Stomach Botox is also frequently used among non-surgical treatment methods. This prospective study examined the relationship between psychological symptoms and self-esteem levels before and after stomach Botox treatment.

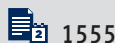
Material/Methods: We administered a survey to gather baseline information, and used the form, Brief Symptoms Inventory and Rosenberg Self-Esteem scales. In total, 406 patients, including 369 females (90.9%) and 37 males (9.1%), participated in the research during February to August 2020.

Results: Anxiety, negative personality, somatization, and hostility levels before Botox treatment were higher than after Botox treatment. Depression levels were higher after Botox treatment. Anxiety, somatization, and hostility increases were statistically significant ($P < 0.05$). Depression and negative personality differences were insignificant ($P > 0.05$). Before Botox treatment, all psychological symptom and self-esteem level correlations were insignificant ($P > 0.05$). After Botox treatment, correlations between anxiety, negative personality and hostility levels with self-esteem level were statistically and negatively significant ($P < 0.05$). Anxiety after Botox treatment had a significant effect on self-esteem level on multivariate level ($P < 0.05$).

Conclusions: Obesity treatment methods positively affect physical health and mental health. While there are many confusing scientific studies on stomach Botox treatment, none of these studies seem to have had strict diet and movement monitoring. Stomach Botox treatment not only positively affects the physical appearance and mental health of individuals, but also their self-perception during the obesity treatment process.

Keywords: Botulinum Toxins, Type A • Self Concept • Signs and Symptoms

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Background

Obesity is one of the important health problems of today that negatively affects the quality of life of individuals. Obesity, measured by body mass index, means that the body has more weight than it should. Studies on obesity, especially in developed countries, have revealed that many factors, from nutritional level to physical activity, affect obesity [1-7].

Psychiatric health status is an important concept that is also related to the physical health of individuals. There are studies reporting that individuals with psychiatric disorders also have some physical problems [8-11]. Self-esteem, which is an indicator of individuals' self-confidence and psychological mental health, is closely related to body image and psychiatric health [12-14].

Although there are studies in the literature examining the relationship between obesity and psychological and psychiatric health, there are few studies that reveal this time-based relationship with self-esteem. Thus, the present study examined the relationship between psychological symptoms and self-esteem levels before and after stomach Botox treatment.

Material and Methods

Sampling

Participation in the research was carried out on a voluntary basis, by simple random sampling method. As a sampling method, consent was obtained from the patients who met the volunteer criteria for randomization, and then the questionnaire was administered by the researcher himself. In the study, the presence of a psychiatric or psychological condition that could affect the results was chosen as an exclusion criterion. Medeiro et al (2021) reported the mean self-esteem as 2.87 ± 0.73 in their study on obese individuals. In this study, the effect value was found to be 0.3931507 with 10% deviation. At this effect value, the minimum number of patients required to be recruited was 72 according to the power analysis performed in the G power 3.1.9.2 program, with a 95% confidence interval and 0.05 margin of error ($t_{critical} = 1.6665977$; $P < 0.05$).

Ethics Statement

The study protocol was permitted by Biruni University Faculty of Medicine Ethics Committee and the Ministry of Health (Date: 15.02.2023, IRB Number: KA EK 75-23-10). The study was completed according to the mandates of the Helsinki Declaration. All patients were given full information about the study procedures before providing written consent. In data collection, patients attending a private center voluntarily participated in

the survey, which included a baseline information form and the Brief Symptoms Inventory and Rosenberg Self-esteem scales.

Inclusion Criteria

Adult patients aged 18-60 years, with BMI >30 with/without comorbidities were included in the study.

Exclusion Criteria

Patients were excluded if they presented:

1. Endocrine-related obesity.
2. Active gastrointestinal disease (endoscopy-diagnosed esophagitis, peptic ulcer, cancer, etc.) or history of gastric surgery.
3. Gastrointestinal motility dysfunction caused by opioid treatment, anticholinergics, or other drugs.
4. Those who have been diagnosed with psychiatric illness and are on medication.
5. Pregnancy or breastfeeding.

Endoscopy

In our hospital, a single upper endoscopy was performed on all patients. For stomach Botox injection, we used 500U AbobotulinumtoxinA (Dysport®; Ipsen BioPharma, Ash Road, Wrexham Industrial Estate, Wrexham, LL 13 9UF, United Kingdom) diluted in 25 ml physiological saline solution. With an endoscopic needle, this solution was injected 1 ml into 25 points of the stomach muscle layer. The injections were made in a circular distribution; 5 injections were made in circles 3, 5, 7 and 9 cm away from the pyloric ring and at equal distance in a fifth circle at the level of the fundus.

Patient Follow-Up

A total of 3 visits were scheduled for each patient: after the endoscopy and follow-up visits at months 6 after the technique. In all of them, a physical examination to assess weight, height and body mass index were performed. Weight and height were measured with an electronic scale (SECA 665, Hamburg, Germany) without shoes and clothes. During follow-up visits, patients were questioned in terms of adverse effects, as well as at the beginning and at 6 months. A questionnaire including the Brief Symptoms Inventory and the Rosenberg Self-Esteem Scale was administered to the patients during the month.

The effective time of Botox in gastric Botox treatment is on average 4-6 months. In scientific studies, no systemic adverse effects due to gastric Botox treatment have been observed. In the present study, no systemic adverse effects were observed. In the first week, dyspeptic problems were rare. Many scientific studies have controversial results regarding weight gain after stomach Botox treatment, but nutritional follow-up was

Table 1. Some basic parameters of patients.

Parameter	Value
Gender, n (%)	
Female	369 (90.9)
Male	37 (9.1)
DM, n (%)	6 (1.5)
CVD, n (%)	16 (3.9)
HT, n (%)	30 (7.4)
Weight, mean±SD	101.12±10.36
Height, mean±SD	1.71±0.04
Initial BMI, mean±SD	41.32±4.33
Weight difference, mean±SD	19.87±4.09
BMI at 6 th month, mean±SD	34.35±3.25
RSB yotal	22.44±1.43

DM – diabetes mellitus; CVD – cardiovascular disease; HT – hypertension; BMI – body mass index; RSB – Rosenberg Self-esteem.

not performed on the patients in these studies. After the procedure performed by us, the patients were followed up online for 6 months. They were given a protein-based diet and asked to walk a minimum of 10 000 steps per day. Thus, we tried to change the poor eating habits and sedentary life habits that prevent weight loss or cause the weight to be regained.

Brief Symptoms Inventory

The BSI was developed from Scale-90 and validated in the Turkish language by Sahin and Durak. The BSI includes 53 items and 5 factors: Anxiety, Depression, Negative Personality, Somatization, Hostility. Cronbach alpha levels of BSI ranged from 0.71 to 0.85 [15].

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale includes 10 items and scales self-esteem with 1 dimension. The Cronbach alpha level of the scale was 0.87.

Since the research design was non-invasive and participation was voluntary, no ethics approval was required. Instead, institute approval and patient consent forms were applied to participants.

Nominal and ordinal parameters were described with frequency analysis. Scale parameters were described with means and standard deviations. The Kolmogorov-Smirnov test was used for normality of scale parameters. The Wilcoxon Signed Rank Test was used for before and after comparisons. Spearman's rho correlation was used for relationship analysis. Linear regression analysis was used for multivariate analysis. SPSS 17.0 for windows was used for analysis with 95% confidence interval at 0.05 significance level.

Results

In total, 406 patients, including 369 females (90.9%) and 37 males (9.1%), participated in the research. Six patients (1.5%) had diabetes mellitus (DM), 16 patients (3.9%) had cardiovascular disease (CVD), and 30 patients (7.4%) had hypertension (HT). The mean weight of patients was 101.12±10.36, with 81.3-101.12 range. The mean initial body mass index (BMI) was 41.32±4.33 and the weight difference mean was 19.87±4.09. The mean BMI at 6 months was 34.35±3.25. The minimum age was 29 and the maximum age was 58, with 45.70±5.97 mean (Table 1).

Anxiety, negative personality, somatization, and hostility levels before Botox treatment were higher than after Botox treatment. Depression level was higher after Botox treatment. RSB self-esteem mean was 22.44±1.43, with 19-24 range. Difference analysis results showed that anxiety, somatization and hostility increases were statistically significant ($P<0.05$). On the other hand, differences in depression and negative personality differences were insignificant ($P>0.05$) (Table 2).

Before Botox treatment, all psychological symptom and self-esteem level correlations were insignificant ($P>0.05$). After Botox treatment, correlations between anxiety, negative personality, and hostility levels with self-esteem level were statistically and negatively significant ($P<0.05$) (Table 3, Figure 1).

Table 2. Psychological symptoms and self-esteem levels before and after stomach Botox treatment.

	Before Botox	After Botox	p*
Anxiety	21.24±2.17	17.83±1.60	0.000
Depression	7.67±7.72	8.00±6.57	0.454
Negative personality	3.35±1.18	3.24±1.16	0.141
Somatization	2.49±1.73	2.24±1.65	0.027
Hostility	1.49±1.30	1.05±1.16	0.000

* Wilcoxon Signed Rank Test.

Table 3. Spearman's rho correlation analysis results between psychological symptoms and self-esteem levels before and after stomach Botox treatment.

	Before Botox	After Botox
Anxiety	-0.018	-0.233**
Depression	-0.039	0.029
Negative personality	-0.053	-0.119*
Somatization	-0.026	0.063
Hostility	-0.088	-0.099*

* $P < 0.05$, ** $P < 0.01$.

Regression analysis showed that anxiety after Botox treatment had significant effect on self-esteem level on a multivariate level ($P < 0.05$). The direction of relation was negative, showing that decrease in anxiety increases self-esteem (Table 4).

Discussion

In this study, the relationship between self-esteem and psychiatric health was investigated in individuals with obesity problems and who had Botox treatment. There are many studies in the literature examining the relationship between body image and self-perception and psychiatric health. The common point of these studies is that obesity and changing body proportions cause significant psychological and psychiatric problems in individuals, which causes loss of self-confidence [17-22]. On the other hand, there are few studies on the effect of stomach Botox treatment, which is used effectively in the treatment of obesity. While there are many confusing scientific studies on stomach Botox treatment, none of these studies seem to have had strict diet and movement monitoring. If changes are made in lifestyle, eating habits, and movement habits after gastric Botox treatment and individuals are ensured to comply with these changes, satisfactory results can be obtained in reducing excess weight.

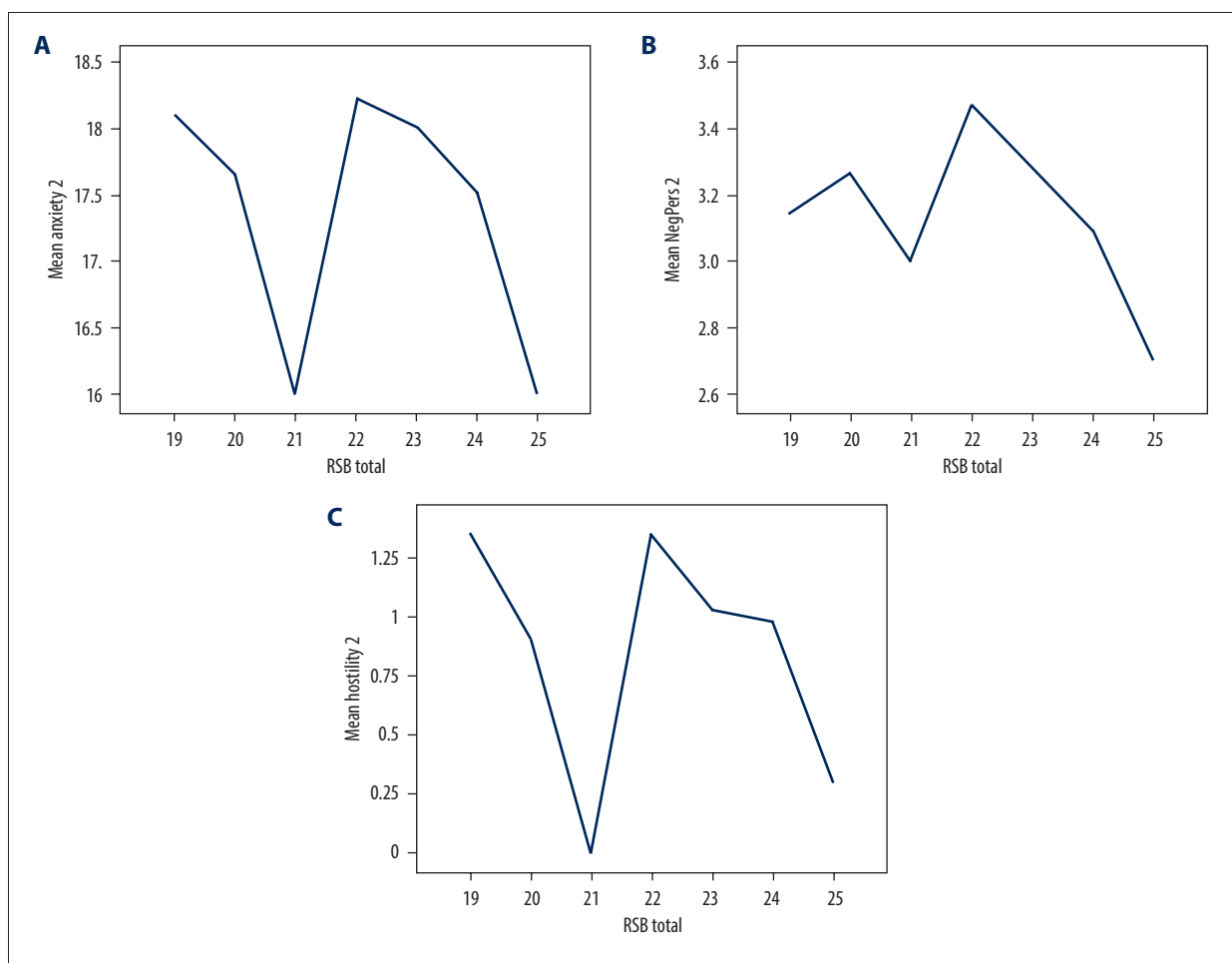


Figure 1. Correlations between self-esteem with anxiety (A), negative personality (B) and hostility (C).

Table 4. Regression analysis for self-esteem with anxiety, negative personality, and hostility.

	Unstandardized coefficients		Standardized coefficients		t	P
	B	Std. error	Beta			
(Constant)	24.915	0.834			29.869	0.000
Anxiety	-0.116	0.048	-.124		-2.423	0.016
Negative personality	-0.036	0.065	-.028		-.549	0.583
Hostility	-0.096	0.066	-.074		-1.453	0.147

R²: 0.021; F: 3.846; P<0.05.

The relationship between self-esteem and psychological health of individuals has been revealed in many studies [23-25]. According to the findings of the present study, while the relationship between the psychiatric health indicators of the individuals and their self-esteem was not significant before Botox application, this relationship became significant after the application. In other words, it can be stated that, thanks to stomach Botox treatment, individuals achieve a similar mental-body health to normal healthy individuals.

Regression analysis results showed that the relationship between self-esteem and anxiety was significant at the multivariate level. This is particularly important in terms of anxiety reduction while waiting for an invasive intervention. In other words, individuals not only overcame the stress of the procedure, but also had a lower anxiety level.

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Conclusions

The results obtained in the study show that obesity treatment methods positively affect not only the physical health of individuals but also their mental health. The size of the research sample increases the importance of the results obtained. Therefore, it can be stated that stomach Botox treatment not only positively affects the physical appearance and mental health of individuals, but also their self-perception during the obesity treatment process.

Department and Institution Where Work Was Done

Department of General Surgery of Hitit University School of Medicine, Çorum, Turkey.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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