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PREOPERATIVE AND POSTOPERATIVE CHANGES IN EATING BEHAVIOR AND AFFECTIVE STATES AFTER BARIATRIC SURGERY

Humoyun Nuralievich Kuchkarov
Tashkent State Medical University, EMU University, Tashkent, Uzbekistan

Abstract: Bariatric surgery is recognized as an effective intervention for the treatment of obesity, resulting not only in considerable weight reduction but also in notable psychological and behavioral changes. The present study was designed to assess the clinical course of eating behavior disturbances and affective symptoms, including anxiety and depression, during the postoperative period in patients who underwent bariatric surgery. The research focused on the dynamics of emotional, external, and restrained eating patterns, along with levels of anxiety and depressive symptoms, within the first three months after surgery. Psychological assessment was carried out using the DEBQ and HADS questionnaires. The findings indicated that, compared to the preoperative period, the first three months after surgery were characterized by a significant decrease in emotional eating as well as anxiety and depressive manifestations. These results highlight the importance of long-term psychological follow-up for bariatric patients and the integration of comprehensive psychocorrective strategies aimed at maintaining emotional stability and healthy eating behavior.
Keywords: Bariatric Surgery, Obesity, Eating Behavior, Emotional Eating, Affective Disorders, Anxiety, Depression, DEBQ, HADS, Body Image, Clinical Dynamics.

Introduction

The increasing prevalence of obesity has become a growing global problem. Bariatric surgery remains the most effective method for the treatment of severe obesity, and studies demonstrate significant weight loss as well as improvement or even resolution of obesity-related comorbidities [8]. The most pronounced weight reduction is observed during the first months after surgery [2]; however, between 20% and 50% of patients regain weight during long-term follow-up. Differences in weight-change trajectories among patients who have undergone bariatric surgery begin to emerge between 6 and 12 months after the operation [8], and these trajectories influence the prevalence of comorbid conditions as well as related healthcare costs [3]. Postoperative overeating, loss of control over eating, and frequent snacking have been identified as predictors of unfavorable weight-loss outcomes after surgery [4].

The most probable risk factor for the development of psychiatric complications after bariatric surgery is the presence of one or more mental disorders prior to the operation. Common psychiatric conditions observed in candidates for bariatric surgery include depression, anxiety disorders, and compulsive overeating [7]. Untreated eating disorders (particularly anorexia nervosa or bulimia nervosa), psychotic symptoms, severe depression, or active substance-related disorders are considered relative contraindications to bariatric surgery. However, it should be emphasized that these pre-existing psychiatric conditions are not absolute contraindications and should instead be individually assessed and treated.

The concept of food addiction may help explain the different weight-change trajectories observed after bariatric surgery. Certain foods (such as highly palatable products containing refined carbohydrates and/or added fats) have been suggested to possess pharmacokinetic properties similar to addictive substances [9]. These products may activate addictive processes in susceptible individuals. This process, in turn, may lead to eating behaviors associated with weight gain, such as compulsive overeating and binge eating [5].

Currently, studies on eating disorders among patients after bariatric surgery remain limited. The prevalence of eating disorders in postoperative bariatric patients is relatively low, ranging from 2% to 14%.

At the same time, cases of de novo eating disorders after bariatric surgery have not been identified [6]. Improvements in eating disorder symptoms, as well as in related maladaptive eating habits, have led some researchers to consider the potential use of bariatric surgery as a treatment.

Material and Methods

In The study was conducted at the multidisciplinary clinic of Tashkent Medical Academy between 2024 and 2026. A total of 124 patients with obesity who underwent bariatric surgery in the surgical department were included in the study.

The participants were divided into a main group and a control group. The main group consisted of 70 patients (56%) who underwent bariatric surgery and demonstrated a recurrence of affective symptoms during follow-up. The control group included 54 patients (44%) who also underwent bariatric surgery but did not show progression or recurrence of symptoms over time.

Patients with obesity who had undergone bariatric surgery were enrolled in the study. Eating behavior and affective status were assessed at 3, 6, and 9 months after surgery. Psychodiagnostic evaluation was performed using the DEBQ questionnaire to assess emotional, external, and restrained eating patterns; the HADS scale to evaluate anxiety and depressive symptoms; and the BIDQ to determine the level of body image dissatisfaction. The obtained data were statistically analyzed to evaluate correlations between indicators and their dynamic changes over time. Statistical significance was set at $p < 0.05$. The study was conducted in accordance with bioethical principles.

Results and Discussion

Preoperative assessment of anxiety symptoms. At the preoperative stage, patients' psychoemotional status was objectively assessed using the HADS-A scale to determine the level of anxiety. This assessment made it possible to evaluate the comparability of the psychological state of the main and control groups before surgical intervention.

In the main group (n = 70), clinically significant anxiety symptoms were observed in 55 patients (78.6%). Subclinical anxiety was identified in 6 patients (8.6%), while normal-range scores were found in 9 patients (12.9%). The median HADS-A score in this group was 12.5 points, with an interquartile range of [11.0–14.0].

In the control group (n = 54), clinically significant anxiety symptoms were observed in 41 patients (75.9%). Subclinical anxiety was detected in 11 patients (20.4%), while only 2 patients (3.7%) demonstrated scores within the normal range. The median score in this group was 12.0 points, with an interquartile range of [11.0–13.0].

In both groups, HADS-A scores were above the clinically significant threshold (≥11 points), indicating the presence of prolonged psychoemotional stress associated with obesity, difficulties in social adaptation, and anxiety related to the planned surgical intervention.

According to the statistical analysis, no significant difference in anxiety levels between the main and control groups was found in the preoperative period ($U = 2039$; $\chi^2 = 6.00$; $df = 2$; $p = 0.449$). This confirms that the baseline psychoemotional status of both groups was comparable.

In addition, the overlap of interquartile ranges and the similarity of median values indicated a nearly identical distribution of anxiety levels between the groups. This allowed postoperative psychological changes to be more directly associated with the surgical intervention and subsequent adaptation processes.

Postoperative anxiety symptoms after bariatric surgery. According to descriptive statistical analysis, the mean HADS-A score in the main group was 7.99 ± 3.12 points. The median value was 9 points, with scores ranging from 0 to 13. In the control group, the mean HADS-A score was 11.48 ± 2.42 points, with a median of 12 points and a range from 5 to 17. These results indicate that anxiety symptoms were more pronounced in the control group compared to the main group.

According to the clinical interpretation of the HADS-A scale, patients were divided into three categories based on anxiety levels. In the main group, 20 patients (28.6%) had HADS-A scores between 0 and 7, corresponding to normal or subclinical levels. In 38 patients (54.3%), scores ranged from 8 to 10, indicating borderline anxiety. Meanwhile, 12 patients (17.1%) had scores of 11 or higher, reflecting clinically significant anxiety symptoms.

In the control group, only 3 patients (5.6%) had scores within the 0–7 range. Borderline anxiety levels were observed in 14 patients (25.9%), whereas the majority of patients—37 individuals (68.5%)—continued to exhibit clinically significant anxiety symptoms.

Comparative analysis between the groups demonstrated a statistically significant difference in HADS-A scores ($U = 691.5$; $p < 0.001$).

These findings indicate a significant reduction in anxiety symptoms among patients in the main group during the postoperative period after bariatric surgery. At the same time, the persistence of borderline anxiety levels in more than half of the patients highlights the importance of regular psychological monitoring and individualized psychocorrective interventions during the postoperative period. The high prevalence of clinically significant anxiety symptoms in the control group indirectly confirms the positive effect of bariatric surgery on psychoemotional status (Table 1).

Table 1. Dynamics of anxiety levels according to HADS-A across groups in the preoperative period and at 3 months after surgery.

	Anxiety level (HADS-A)			
	Preoperative period		**3 months after surgery**	
Norm (0–7 ball)	9 (12,9%)	2 (3,7%)	20 (28,6%)	3 (5,6%)
Subclinical (8–10 ball)	6 (8,6%)	11 (20,4%)	38 (54,3%)	14 (25,9%)
Clinical (≥11 ball)	55 (78,6%)	41 (75,9%)	12 (17,1%)	37 (68,5%)
Median [IQR]	**12,5 [11,0–14,0]**	**12,0 [11,0–13,0]**	**9 [0–13]**	**12 [5–17]**

Note: A statistically significant difference was observed between the groups ($U = 691.5$; $p < 0.001$).

Preoperative and postoperative dynamics of depressive symptoms according to HADS-D

In the preoperative period, the distribution of depressive symptoms according to the HADS-D scale was analyzed in both the main and control groups. In the main group, subclinical symptoms were identified in 12 patients (17.1%), and normal-range scores were found in 19 patients (27.1%), whereas clinically significant depressive symptoms were observed in 39 patients (39.8%). The median score in this group was 11.0 points, with an interquartile range of [7.0–13.0].

In the control group, clinical depression was observed more frequently, being recorded in 40 patients (74.0%). Subclinical depressive symptoms were identified in 9 patients (16.7%), while normal-range scores were found in only 5 patients (9.3%). The median value in this group was also 11.0 points, with an interquartile range of [10.25–13.0], and the minimum and maximum values were 4 and 14 points, respectively.

The distribution of clinical, subclinical, and normal HADS-D scores between the groups showed a statistically significant difference ($U = 1783$; $\chi^2 = 6.65$; $p = 0.035$), confirming the predominance of clinically significant depressive symptoms in the control group.

According to descriptive statistical analysis, at the 3-month follow-up, the mean HADS-D score was 6.66 ± 4.00 points. During this period, 36 patients (51.4%) demonstrated depressive symptoms within the normal range, 21 patients (30.0%) showed subclinical levels, and 13 patients (18.6%) had clinically significant depressive symptoms. These findings indicate a relative stabilization of psychoemotional status in the early postoperative stage.

At 3 months, HADS-D scores were compared between the main and control groups using the Mann–Whitney U test. Depressive symptom levels were statistically higher in the main group, and the difference was found to be significant (Me = 8 [3–10] vs. Me = 6 [6–7]; $U = 2320$; $p = 0.016$).

The categorical distribution of HADS-D scores at 3 months was also analyzed using the χ^2 test. A highly significant difference between the groups was identified ($\chi^2 = 38.54$; $df = 2$; $p < 0.001$). Clinical and subclinical depression were observed only in the main group, whereas these conditions were not detected in the control group.

Table 2. Dynamic indicators of depressive symptoms according to HADS-D in the preoperative and postoperative periods.

	Depression level (HADS-D)			
	Preoperative period		3 months after surgery	
Norm (0–7 ball)	19 (27,1%)	5 (9,3%)	36 (51,4%)	54 (100%)
Subclinical (8–10 ball)	12 (17,1%)	9 (16,7%)	21 (30,0%)	
Clinical (≥11 ball)	39 (55,8%)	40 (74,0%)	13 (18,6%)	
Median [IQR]	11,0 [7,0-13,0]	11,0 [10,25-13,0]	6 [6-7]	

Note: Clinical and subclinical depression were observed only in the main group (U = 2320; p = 0.016).

Conclusion

The results of the study showed that, in the preoperative period, the majority of patients with obesity demonstrated clinically significant levels of anxiety and depressive symptoms. The statistical similarity of HADS-A anxiety levels between the main and control groups confirmed the comparability of the preoperative psychoemotional background and provided a reliable baseline for evaluating subsequent dynamic changes.

In the postoperative period, patients in the main group demonstrated a significant reduction in anxiety symptoms, reflected in decreased mean and median HADS-A scores. In contrast, the persistence of clinically significant anxiety levels in the control group indicated the continuation of psychoemotional stress in the absence of surgical intervention. These findings confirm the positive psychological effect of bariatric surgery on anxiety symptoms.

The analysis of depressive symptoms revealed a similar trend. In the preoperative period, clinical depression was more prevalent in the control group, whereas after surgery, more than half of the patients in the main group showed depressive symptoms within the normal range. At the same time, the persistence of subclinical and clinical depressive symptoms in a portion of patients indicates that psychological adaptation is an individual and multifactorial process.

Overall, the obtained results confirm that bariatric surgery has a positive effect on reducing affective disorders associated with obesity. However, the incomplete resolution of anxiety and depressive symptoms in the postoperative period justifies the need for regular psychological monitoring, early psychocorrection, and a multidisciplinary approach.

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