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# Psychological Considerations for Bariatric Surgery

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## Abstract

Obesity management requires a multidisciplinary, integrated treatment composed of medical, nutritional, physical, and psychological interventions. Currently, bariatric surgery is the most suitable treatment available in case of severe obesity, or obesity with comorbid medical conditions. Despite bariatric surgery results in a significant weight loss in most of the cases, a not-inconsiderable portion of patients does not achieve relevant outcomes, in terms of limited weight loss or weight regain due to psychological problems. The pre-operative evaluation of the psychological conditions of the candidates for bariatric interventions and pre/post-surgical psychological support is required in order to achieve the desired post-operative outcomes for a long time. In this chapter, we will elucidate the core components of the psychological assessment of bariatric candidates. Moreover, the main directions for the pre/post-surgery psychological support will be provided.

**Keywords:** obesity, obesity management, bariatric surgery, psychological assessment, psychological support

## 1. Introduction

Bariatric surgery is the most effective option for individuals with severe obesity. It includes several surgical procedures, commonly divided into restrictive such as Laparoscopic Adjustable Gastric Banding, Banded Gastric Bypass, Sleeve Gastrectomy, malabsorptive such as Biliopancreatic Diversion, Intra-gastric Balloon, and mixed procedures such as Roux-en-Y- Gastric Bypass, Mini Gastric Bypass, and Gastric Bypass.

Bariatric surgery procedures lead to substantial weight loss and marked improvements in obesity-related comorbidities as well as quality of life. Nonetheless, there is a significant variation in long-term weight loss maintenance and weight regain has been partially attributed to psychological factors.

For these reasons, the pre-operative evaluation of the psychological conditions of the candidates for bariatric interventions is required in order to achieve the

desired post-operative outcomes for a long time. In addition, adjunctive pre or post-operative psychosocial interventions are highly recommended for bariatric patients [1, 2] with psychological difficulties.

Within this chapter, the main components of pre-surgical psychological assessment for bariatric candidates will be discussed, including procedures and instruments involved. Moreover, an overview of the principal characteristics of pre/post-surgical psychological support will be provided.

## **2. Assessment for bariatric candidates**

Bariatric surgery has become a popular treatment option for the management of obesity. However, not every obese individual could be considered as a candidate for bariatric surgery. The National Institutes of Health (NIH) Consensus Development Conference Panel held in 1951 outlined criteria for patients considering for bariatric surgery:

- BMI > 40 (obesity grade III); BMI > 35 (obesity grade II) with comorbidities; BMI > 30 (obesity grade I with uncontrolled Diabetes Mellitus type 2 and high cardiovascular risk)
- Reported previous failure of nonsurgical weight-loss efforts
- Absence of medical or psychological contraindications
- Being well-informed, motivated, and compliant

A pre-surgical evaluation of the candidates to bariatric surgery should be conducted in order to assess the presence of recommended criteria for surgery, and to identify and modify, when possible, any risk factors associated with undesired treatment outcomes that may reduce the long term-successful weight loss.

## **3. Psychological assessment for bariatric surgery candidates**

Within the pre-surgical evaluation, the psychological assessment of candidates for bariatric surgery is an essential component. The rationale for the evaluation for bariatric surgery candidates was based on collecting evidences suggesting the presence of a higher level of psychiatric disorders among obese patients than the normative population [3]. The principal goals of psychological pre-surgical evaluation are:

- to identify any psychosocial contraindications to surgery and obstacles to post-operative success, or any psychosocial factor predicting previous weight gain prior to surgery;
- to screen candidates who may benefit from a psychological treatment prior to surgery, in order to maximize long term bariatric outcomes and improve their quality of life;
- to select patients who may need further psychological support after surgery;
- to propose alternative treatment when patients do not meet the criteria for bariatric surgery [4].

#### **4. Psychological conditions of bariatric surgery patients**

According to a recent systematic review [5] about one-third of bariatric surgery candidates present a psychological disturbance, such as depression and anxiety and there is a high prevalence of Binge Eating Disorder [6]. Other mental health conditions related to bariatric candidates are psychosis, PTSD substance abuse and personality disorders.

Although the prevalence of mental health conditions among bariatric patients is higher than in the normative population, there is no clear evidence that pre-operative mental health conditions are associated with poorer post-operative weight loss [7]. Nevertheless, prospective studies showed that pre-operative depression and anxiety predict poorer outcomes after surgery [6].

Unfortunately, long term successful weight loss could be less than optimal, and partially depends on the individual's ability to implement consistent lifestyle changes. For these reasons the psychological evaluation of bariatric surgery candidates is requested for monitoring and addressing psychological factors pre-and-post surgery.

In a recent review [8] aimed to explore the present practices adopted by clinics to assess bariatric candidates, it has been highlighted that, in many cases, the presence of uncontrolled symptoms of schizophrenia, drug and alcohol abuse, mental retardation and lack of knowledge about surgery are considered contraindications to surgical approval. Other factors that most frequently are considered limitations to surgery include the presence of symptoms of bipolar disorder and history of suicide attempts, lack of compliance to medical recommendations, unrealistic expectation to surgery outcome, while the age of patients as well as the lack of social support are often considered no-contraindication to surgery. Possible contraindications that could represent a limitation to surgery are past criminal behaviors, the presence of eating disorders, and the inability to follow a diet over time. Finally, according to the programs included in the study, binge eating disorder, depression, obsessive-compulsive disorder, tobacco use, and history of sexual abuse are considered definite or possible contraindication to surgery.

#### **5. The current practices of pre-surgical psychological evaluation**

Although the relevance of the psychological assessment for bariatric surgery candidates was recognized for a long time, currently no evidence-based guidelines are available [9, 10].

According to the most commonly used practices in surgery clinics, the evaluation of candidates for bariatric surgery comprises a medical chart review, a comprehensive clinical interview, and psychological testing [11]. Moreover, the psychological assessment should be part of a multidisciplinary approach aimed to carefully assess risks and benefits for the patients related to surgery.

Clinical interviews are commonly used in bariatric centers. During the interview, several areas of interests should be properly investigated:

- Patient's understanding of the surgery

Patients seeking bariatric surgery are required to have adequate knowledge about the surgery procedures, including which are the potential risks associated with surgery, as well as the lifelong behavioral change that must occur for achieving expected results. For these reasons, during the presurgical psychological evaluation, it is important to know which are the patient's expectation to surgery and assess their willingness to engage themselves in a stable lifestyle behavioral change.

- Eating behaviors

Among the obese population, there is a high prevalence of individuals with comorbid Binge Eating Disorder (BED), mainly characterized by frequent episodes of binge eating in the absence of following compensatory strategies such as vomiting or purging. Other common eating disorders are Bulimia Nervosa (BN) and Night Eating Syndrome (NES). BM refers to recurrent binge episodes associated with compensatory extreme weight-control behaviors such as vomiting, purging, strict dieting, excessive physical activity. NES consists of morning anorexia, evening hyperphagia, and insomnia. Patients with an eating disorder need to understand that surgery alone cannot modify their problematic eating behaviors, but further efforts in changing their lifestyle behaviors related to eating and physical activity are required in order to achieve lifelong weight loss.

- Psychiatric conditions

Any previous or current psychiatric disturbance should be addressed during the pre-surgical assessment. The evaluation for psychiatric disorders is aimed to identify symptoms of depression, anxiety, mania, psychosis, suicidal ideation, substance abuse, history of abuse or familial history of mental health problems and previous treatment experienced. Diverse opinions exist about the influence of psychiatric disturbances on surgery outcomes. According to some authors, the presence of one or more mentioned psychiatric disturbances alone is not a contraindication for bariatric surgery. However, it is important to evaluate the severity of symptomatology and, if necessary, referring patients for additional psychological support previous to surgery. Other authors suggest that the presence of uncontrolled eating, current substance abuse, poor adherence to recommendation, psychosis, severe mood disorders, major life stressors should be considered as contraindications to bariatric surgery [12, 13].

- Social support

Given the impact that surgery will have not only on their lives but also on the environment where patients live, during the psychological assessment clinicians should explore the familial and the social context that surrounds patients. Candidates should be asked to describe the people who live with them, their opinion relative to bariatric surgery decision and whether their family will help them after surgery. Patients should be informed about the possible social consequences that may occur after surgery.

## **6. Principal interviews and tests available for the assessment of bariatric candidates**

There is an availability of templates for conducting interviews that help clinicians to assess the domains of interest.

- The Weight and Lifestyle Inventory [14] is designed to assess the eating and physical activity habits, the psychological status and the presence of stressful life events.



- The Boston Interview [15] aims to assess weight, diet, and nutrition history, dysfunctional eating, medical condition, understanding of surgical procedures, concerns and benefits, motivation for surgery, interpersonal functioning, and psychiatric conditions.

While clinical interviews are widely used in clinical settings, only a few clinics employ some forms of objective tests. The use of psychological instruments allows clinicians to collect more information, in a rapid but precise validated and empirical way than clinical interviews alone. Some broadband instruments provide a broad assessment of patients, across several psychological domains, including emotional, cognitive and behavioral ones. Unfortunately, broadband instruments cannot provide information about specific content areas, such as eating disorders, and require costs for administration. To overcome these limitations, clinicians can administer narrowband instruments that provide a good solution to assess specific domains. In addition, narrowband instruments are more feasible and can be administered quickly. Below is the description of the most frequently used broadband and narrowband instruments for the psychological evaluation of bariatric candidates.

- Minnesota Multiphasic Personality Inventory (MMPI-2; [16]) is the most widely used instruments for the assessment of surgery candidates. It consists of 587 items and it can be administered in two hours approximately, while the newer version, MMPI-2 Restructured Form (MMPI-2 RF; [17]) is composed of 338 items and the time for administration is 35–50 minutes. MMPI-2 RF allows clinicians to assess the global functioning of patients, including thoughts emotions and behaviors. The test allows also to detect cognitive, interpersonal, and somatic problems.
- Symptom Item Checklist–90 –Revised (SCL–90 –R; [18]). The SCL-90 –R is widely used to assess the global psychological distress by exploring nine dimensions: somatization, depression, anxiety, phobic anxiety, obsessive–compulsive, interpersonal sensitivity, hostility, psychoticism, and paranoid ideation. The higher scores reflect higher distress. It is composed of Likert scale-90 items in which symptoms are presented and patients are asked to report how many times they experienced each symptom in the past 7 days.
- Beck Depression Inventory-II (BDI-II; [19]) is a self-report measure composed of 21 items assessing the presence of depressive symptoms.
- Beck Anxiety Inventory (BAI; [20]). is a self-report measure composed of 21 items assessing the presence of anxiety symptoms.
- Binge Eating Scale (BES; [21]). It is one of the most common instruments used among the bariatric population. It is composed of 16 self-report items assessing binge eating severity.
- The Eating Disorders Inventory–III (EDI-III; [22]); It consists of 91 items related to 11 subscales: bulimia, thinness, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, maturity fears, asceticism, impulse regulation, and social insecurity.

Below, a table to describe the most widely used tests is presented in **Table 1**.

	Number of item	Time for administration	Subscales/Key areas
Personality assessment			
MMPI 2	567	90–120 min	Response attitudes, mental health symptoms, personality traits, and special problems 10 clinical scales and 6 validity scales. Domains: personality traits, mental health symptoms, special problems, response attitudes
MMPI-2-RF	338	35–50 min	42 substantive scales and 9 validity scales. Domains: problems, interests, personality psychopathology
SCL-90-R	90	12–15 min	Global psychological distress. 9 Scales: somatization, obsessive–compulsive, interpersonal sensitivity, depression, anxiety, anger/hostility, phobic anxiety, paranoid ideation, psychoticism
PAI	344	50–60 min	11 clinical scales assessing psychopathology in three spectrums: neurotic, psychotic, and behavioral/impulse control; 5 Treatment scales assessing risk for self-harm or harm to others, how patients respond to environmental factors, and motivation for treatment; 2 interpersonal scales assessing warm/affiliative versus cold/rejecting and dominating/controlling versus submissive; 4 validity scales
MBMD	165	20–25 min	32 clinical scales and 5 validity scales. Domains: response patterns, negative health habits, psychiatric indications, coping styles, and stress moderators
MCMI-III	175	25–30 min	14 personality disorders; 10 clinical syndromes; 5 validity scales
BPI	240	35 min	12 clinical scales: Hypochondriasis, Depression, Denial, Interpersonal Problems, Alienation, Persecutory Ideas, Anxiety, Thinking Disorder, Impulse Expression, Social Introversion, Self-Depreciation, and Deviation; 2 validity scales
Eating disorders			
EDI-3	91	20 min	11 subscales: drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, maturity fears, asceticism, impulse regulation, and social insecurity
EDE-Q	32	5–10 min	Eating behaviors. Subscales: restraint, eating concern, weight concern, and shape concern
QEWP	28	5 min	Binge eating patterns
TFEQ	51	20 min	Cognitive and behavioral components of eating. 3 scales: restraint, hunger, and disinhibition
BES	16	5 min	Symptoms of Binge Eating
NEQ	14	5–10 min	Symptoms of night eating syndrome. 4 scales: nocturnal ingestion, evening hyperphagia, morning anorexic, and mood/sleep
Mood Disturbances			
BDI-II	21	5–10 min	Symptoms of depression
BAI	21	5–10 min	Symptoms of anxiety
PHQ-9	9	5 min	Symptoms of depression

	Number of item	Time for administration	Subscales/Key areas
CES-D	20	10 min	Symptoms of depression
MDQ	13	5 min	Bipolar symptoms
GAD-7	7	5 min	Symptoms of anxiety
Substance abuse			
AUDIT	10	5 min	Drinking patterns
MAST	25	5–10 min	Alcohol abuse and related problems
SASSI-3	93	20 min	Substance abuse. 8 subscales: symptoms of substance misuse, obvious attributes, subtle attributes, defensiveness, supplemental addiction measure, family versus control subjects, correctional, and random answering pattern
Quality of life			
IWQL	74	15 min	8 domains: health, social/interpersonal life, work, mobility, self-esteem, sexual life, activities of daily living, comfort with food
Cognitive development			
MMSE	30	10 min	Cognitive impairment. Domains: orientation, attention, registration, recall, language, repetition, complex commands.
Physical conditions			
MBHI	150	20 min	Personality and Coping style among people with physical pathologies. 8 coping style scales; six psychogenic attitudes; 3 psychosomatic correlate scales; 3 risk for poorer outcomes scales.
<i>Abbreviations: MMPI-2; Minnesota Multiphasic Personality Inventory 2; MMPI-2-RF: Minnesota Multiphasic Personality Inventory-2-Revised Form; SCL-90-R: Symptom Check-List-90-Revised; PAI: Personality Assessment Inventory; MBMD: Millon Behavioral Medicine Diagnostic; MCMI-III: Millon Clinical Multiaxial Inventory; BPI: Basic Personality Inventory; EDI-3: Eating Disorders Inventory; EDE-Q: Eating Disorder Examination-Questionnaire; QEWP: Questionnaire of Eating and Weight Patterns-Revised; TFEQ: The Three-Factor Eating Questionnaire; BES: Binge Eating Scale; NEQ: Night eating Questionnaire; BDI-III: Beck Depression inventory; BAI: Beck Anxiety Inventory; PHQ-9: The Patient Health Questionnaire-9; CES-D: Center for Epidemiologic Studies Depression Scale; MDQ: Mood Disorders Questionnaire; GAD-7: Generalized Anxiety Disorder-7; AUDIT: Alcohol Use Disorders Identification Test; MAST: Michigan Alcoholism Screening Test; SASSI-3: Substance Abuse Subtle Screening Inventory-3; IWQOL: Impact of Weight on Quality of Life; MMSE: Mini-Mental State Evaluation; MBHI: Millon Behavioral Health Inventory.</i>			

**Table 1.**  
*Principal used psychometric instruments for the assessment of bariatric candidates.*

7. Psychological pre/post-surgical intervention for bariatric candidates

Bariatric surgery is the most effective intervention for weight loss in the field of obesity management. Unfortunately, patients often do not achieve optimal results in term of weight loss maintenance over time and meet various difficulties related to eating behaviors and psychological functioning. Given the significant variation in weight long-term outcomes after surgery that could be partially attributed to a number of risk factors, including psychological factors, psychological pre-operative or post-operative interventions are increasingly being recommended for patients seeking or undergoing bariatric surgery [23].



The most delivered psychological interventions included Cognitive Behavioral Therapy (CBT) but promising evidence suggests the effectiveness of intervention based on Acceptance and Commitment Therapy (ACT) and Dialectical Behavioral Therapy (DBT).

Cognitive behavioral interventions typically include psychoeducation, goal setting, self-monitoring, stimulus control, problem solving, and reinforcement, for the promotion of lifestyle-related behavior change. Through the psychological intervention, patients are encouraged to recognize their problematic eating behaviors, learn strategies to cope with life stressors, and engage themselves in healthy eating behaviors and physical activity. Recently, David and colleagues [5] conducted a systematic review aimed to examine the effectiveness of cognitive behavioral interventions. Results showed that the most common techniques employed during the interventions were psychoeducation, self-monitoring, goal setting, stimulus control, cognitive restructuring, problem solving and reinforcement, as well as addressing ambivalence, improving self-care and prevention of relapse. Most of the interventions included in the study were delivered in person, or in combination with telephone or web. With respect to intervention outcomes, the main findings of the review revealed that 32% of included studies showed a significant impact on weight loss. Specifically, it seems that the higher impact on weight loss was found in post-operative intervention, than the benefits of pre-operative interventions which were not maintained at follow-up. Other interventions outcomes were lifestyle behaviors, eating pathology, and psychological functioning. Results showed that psychological interventions seem to have an inconsistent influence on change in dietary habits and physical activity, but a limited number of studies examined this outcome. With respect to eating pathology, psychological interventions included in the study revealed a significant impact on reducing binge eating and emotional eating. Similarly, interventions had a positive impact on psychological functioning. Both pre-operative and post-operative interventions improved quality of life and reduced depression and anxiety symptoms.

Recently, other forms of psychological interventions were applied to bariatric patients. In a pilot RCT, Weineland and colleagues [24] compared an intervention based on ACT (two face to face session in combination with internet-based support) to usual treatment. Results showed that patients in the ACT condition significantly improved in eating disorders, body dissatisfaction, quality of life, and acceptance of thoughts and feelings related to weight.

Promising results were also obtained in an observational study [25] in which a pre-operative intervention based on DBT skills training combined with treatment as usual compared to a treatment as usual group. The intervention of DBT was focused on regulating emotions with emotion regulation, mindfulness, distress tolerance, and interpersonal effectiveness training. The results offered preliminary evidence in support of the effectiveness of a brief DBT skills training intervention in combination with treatment as usual in reducing eating pathology (binge eating and emotional eating).

## **8. Conclusions**

Bariatric surgery has been demonstrated to be a valid solution for the treatment of obesity. It is recommended for well-motivated and informed patients with severe obesity or obesity with related comorbidities. Approximately, all bariatric surgery procedures are effective in producing weight loss and related substantial improvements in health conditions [26–28].

Candidates for bariatric surgery require not only a multidisciplinary pre-operative screening, which is aimed to prepare and educate patients for the lifestyle changes required after surgery, but also would benefit from a supportive, integrated additional psychological interventions aimed to maximize weight loss and weight loss maintenance after surgery. Particularly, weight loss is not the primary goal of psychological interventions. In fact, findings indicate that the pre-operative interventions do not have a significant effect on weight loss [29]. Rather, they should be considered an option for patients to overcome their difficulties, reduce pre-existing symptomatology, and improving in their eating behaviors and lifestyle. On the contrary, psychological post-operative interventions have been associated with significant weight loss and currently they are the most promising approach to improve the outcomes of bariatric surgery.

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## References

- [1] Kalarchian MA, Marcus MD. Psychosocial concerns following bariatric surgery: Current status. *Current Obesity Reports*. 2019;8(1):1-9 <https://doi.org/10.1007/s13679-019-0325-3>
- [2] Velapati, S. R., Shah, M., Kuchkuntla, A. R., Abu-dayyeh, B., Grothe, K., Hurt, R. T., & Mundi, M. S. (2018). Weight Regain After Bariatric Surgery: Prevalence, Etiology, and Treatment. In *Current Nutrition Reports* (Vol. 7, Issue 4, pp. 329-334). Current Science Inc. <https://doi.org/10.1007/s13668-018-0243-0>
- [3] Dixon JB, Dixon ME, O'Brien PE. Depression in association with severe obesity: Changes with weight loss. *Archives of Internal Medicine*. 2003;163(17):2058-2065 <https://doi.org/10.1001/archinte.163.17.2058>
- [4] Block AR, Sarwer DB. Presurgical psychological screening: Understanding patients, improving outcomes. In: Block AR, Sarwer DB, editors. *Presurgical Psychological Screening: Understanding Patients, Improving Outcomes*. American Psychological Association; 2013 <https://doi.org/10.1037/14035-000>
- [5] David LA, Sijercic I, Cassin SE. Preoperative and post-operative psychosocial interventions for bariatric surgery patients: A systematic review. *Obesity Reviews*. 2020 <https://doi.org/10.1111/obr.12926>
- [6] Kalarchian MA, King WC, Devlin MJ, Hinerman A, Marcus MD, Yanovski SZ, et al. Mental disorders and weight change in a prospective study of bariatric surgery patients: 7 years of follow-up. *Surgery for Obesity and Related Diseases*. 2019 <https://doi.org/10.1016/j.soard.2019.01.008>
- [7] Dawes AJ, Maggard-Gibbons M, Maher AR, Booth MJ, Miake-Lye I, Beroes JM, et al. Mental health conditions among patients seeking and undergoing bariatric surgery a meta-analysis. *JAMA - Journal of the American Medical Association*. 2016. DOI: 10.1001/jama.2015.18118
- [8] Bauchowitz, A. U., Gonder-Frederick, L. A., Olbrisch, M. E., Azarbad, L., Ryee, M. Y., Woodson, M., Miller, A., & Schirmer, B. (2005). Psychosocial evaluation of bariatric surgery candidates: A survey of present practices. In *Psychosomatic Medicine* (Vol. 67, Issue 5, pp. 825-832). Psychosom Med. <https://doi.org/10.1097/01.psy.0000174173.32271.01>
- [9] Fabricatore AN, Crerand CE, Wadden TA, Sarwer DB, Krasucki JL. How do mental health professionals evaluate candidates for bariatric surgery? Survey results. *Obesity Surgery*. 2006;16(5):567-573 <https://doi.org/10.1381/096089206776944986>
- [10] Flores, C. A. it. (2014). Psychological assessment for bariatric surgery: current practices. In *Arquivos brasileiros de cirurgia digestiva : ABCD = Brazilian archives of digestive surgery* (Vol. 27, Issue Suppl 1, pp. 59-62). Colégio Brasileiro de Cirurgia Digestiva. <https://doi.org/10.1590/s0102-6720201400s100015>
- [11] Marek RJ, Heinberg LJ, Lavery M, Merrell Rish J, Ashton K. A review of psychological assessment instruments for use in bariatric surgery evaluations. *Psychological Assessment*. 2016;28(9):1142-1157 <https://doi.org/10.1037/pas0000286>
- [12] Edwards-Hampton, S. A., & Wedin, S. (2015). Preoperative psychological assessment of patients seeking weight-loss surgery: Identifying challenges and solutions. In *Psychology Research and Behavior Management* (Vol. 8, pp.

263-272). Dove Medical Press Ltd.  
<https://doi.org/10.2147/PRBM.S69132>

[13] Marihart CL, Brunt AR, Geraci AA. Older adults fighting obesity with bariatric surgery: Benefits, side effects, and outcomes. *SAGE Open Medicine*. 2014;2:205031211453091 <https://doi.org/10.1177/2050312114530917>

[14] Wadden, T. A., & Foster, G. D. (2006). Weight and Lifestyle Inventory (WALI). In *Obesity (Silver Spring, Md.): Vol. 14 Suppl 2*. Obesity (Silver Spring). <https://doi.org/10.1038/oby.2006.289>

[15] Sogg S, Mori DL. Revising the Boston interview: Incorporating new knowledge and experience. *Surgery for Obesity and Related Diseases*. 2008;4(3):455-463.e20 <https://doi.org/10.1016/j.soard.2008.01.007>

[16] Butcher JN. Minnesota Multiphasic Personality Inventory. In *The Corsini Encyclopedia of Psychology* (pp. 1-3). Inc: John Wiley & Sons; 2010 <https://doi.org/10.1002/9780470479216.corpsy0573>

[17] Marek RJ, Block AR, Ben-Porath YS. The Minnesota multiphasic personality inventory-2-restructured form (MMPI-2-RF): Incremental validity in predicting early postoperative outcomes in spine surgery candidates. *Psychological Assessment*. 2015;27(1):114-124 <https://doi.org/10.1037/pas0000035>

[18] Derogatis LR, Unger R. Symptom Checklist-90-Revised. In *The Corsini Encyclopedia of Psychology* (pp. 1-2). Inc: John Wiley & Sons; 2010 <https://doi.org/10.1002/9780470479216.corpsy0970>

[19] Beck, A. T., Steer, R. A., & Brown, G. (1996). Beck depression inventory–II. *Psychological Assessment*. ?

[20] Steer, R. A., & Beck, A. T. (1997). Beck Anxiety Inventory. ?

[21] Gormally J, Black S, Daston S, Rardin D. The assessment of

binge eating severity among obese persons. *Addictive Behaviors*. 1982;7(1):47-55 [https://doi.org/10.1016/0306-4603\(82\)90024-7](https://doi.org/10.1016/0306-4603(82)90024-7)

[22] Garner, D. M. (n.d.). *Eating Disorder Inventory™-3 (EDI™-3)*.

[23] Mitchell JE, Christian NJ, Flum DR, Pomp A, Pories WJ, Wolfe BM, et al. Postoperative behavioral variables and weight change 3 years after bariatric surgery. *JAMA Surgery*. 2016;151(8):752-757 <https://doi.org/10.1001/jamasurg.2016.0395>

[24] Weineland S, Arvidsson D, Kakoulidis TP, Dahl J. Acceptance and commitment therapy for bariatric surgery patients, a pilot RCT. *Obesity Research and Clinical Practice*. 2012;6(1) <https://doi.org/10.1016/j.orcp.2011.04.004>

[25] Delparte CA, Power HA, Gelinas BL, Oliver AM, Hart RD, Wright KD. Examination of the Effectiveness of a Brief, Adapted Dialectical Behavior Therapy-Skills Training Group for Bariatric Surgical Candidates. *Springer*; 2018 <https://doi.org/10.1007/s11695-018-3515-2>

[26] Biter LU, van Buuren MMA, Mannaerts GHH, Apers JA, Dunkelgrün M, Vijgen GHEJ. Quality of life 1 year after laparoscopic sleeve Gastrectomy versus laparoscopic roux-en-Y gastric bypass: A randomized controlled trial focusing on Gastroesophageal reflux disease. *Obesity Surgery*. 2017;27(10):2557-2565 <https://doi.org/10.1007/s11695-017-2688-4>

[27] Flølo TN, Andersen JR, Kolotkin RL, Aasprang A, Natvig GK, Hufthammer KO, et al. Five-year outcomes after vertical sleeve Gastrectomy for severe obesity: A prospective cohort study. *Obesity Surgery*. 2017;27(8):1944-1951 <https://doi.org/10.1007/s11695-017-2605-x>



[28] Porta A, Aiolfi A, Musolino C, Antonini I, Zappa MA. Prospective comparison and quality of life for single-incision and conventional laparoscopic sleeve Gastrectomy in a series of morbidly obese patients. *Obesity Surgery*. 2017;27(3):681-687 <https://doi.org/10.1007/s11695-016-2338-2>

[29] Rudolph A, Hilbert A. Post-operative behavioural management in bariatric surgery: A systematic review and meta-analysis of randomized controlled trials. *Obesity Reviews*. 2013;14(4):292-302 <https://doi.org/10.1111/obr.12013>