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LAS ESTRATEGIAS DE LA TERAPIA COGNITIVO CONDUCTUAL (TCC) PARA PACIENTES DE CIRUGÍA BARIÁTRICA: REVISIÓN SISTEMÁTICA

Priscila Deorato Borrello
Universidad Europea del Atlántico (Spain)
priscilacontact@hotmail.com · https://orcid.org/0000-0002-6291-8410

Resumen. Desde 1991, cuando los NIH reconocieron la cirugía bariátrica como el tratamiento más efectivo para la obesidad mórbida, el número de estos procedimientos no ha dejado de crecer. El psicólogo es una parte fundamental de este equipo multidisciplinar, y la terapia cognitivo conductual ha sido la rama más utilizada por estos profesionales. Sin embargo, se observa una gran variedad de tácticas y recursos de TCC aplicados a los pacientes de cirugía bariátrica, y el objetivo de este trabajo es clarificar la efectividad de los diferentes recursos e identificar patrones centrados en estos pacientes. El método empleado consiste en una revisión sistemática de estudios científicos de TCC para pacientes de cirugía bariátrica. Los resultados fueron el análisis comparativo de estrategias de atención individual, grupal y a distancia, factores de éxito y no éxito en las diferentes modalidades y análisis de los efectos de las comorbilidades psicológicas asociadas a la obesidad en el pronóstico de la cirugía. Las estrategias de TCC presentaron diferentes beneficios entre sí; para una correcta elección de estos recursos, se deben tener en cuenta de modo continuado e individual algunas variables, como la comorbilidad psicológica del paciente, su entorno social, autoestima y capacidad de adaptarse al postoperatorio. Igual de importante que la elección de la estrategia es respetar el tiempo y el período de terapia a lo largo del contexto quirúrgico.

Palabras clave: terapia cognitivo conductual, cirugía bariátrica, cirugía de la obesidad, bypass gástrico, comorbilidad psicológica.

THE STRATEGIES OF COGNITIVE BEHAVIORAL THERAPY (CBT) FOR BARIATRIC SURGERY PATIENTS. A SYSTEMATIC REVIEW

Summary. Since 1991, when bariatric surgery was recognized by the NIH as the most effective treatment for morbid obesity, the number of these procedures continues to grow. The psychologist is a fundamental part of this multidisciplinary team, and cognitive behavioral therapy has been the most used therapy. However, a wide variety of CBT tactics and resources applied to bariatric surgery patients is observed and

the objective of this work is to clarify the effectiveness of these different resources and identify patterns of resources focused on bariatric surgery patients. The method employed is a systematic review of scientific studies of CBT for patients of bariatric surgery. The results were the comparative analysis of individual, group and online therapy strategies, success and non-success factors in the different modalities and analysis of the effects of psychological comorbidities on the prognosis of surgery. The CBT strategies presented unlike benefits to bariatric surgery patients. For a correct choice of CBT resources to be applied to these patients, some variables must be considered individually, such as the psychological comorbidity of the patient, their social environment, self-esteem and ability to adapt to the postoperative period. Equally important to the choice of strategy, is to respect the time and period of therapy throughout this context.

Keywords: cognitive behavioral therapy, cognitive behavioural therapy, bariatric surgery, gastric bypass, psychological comorbidity.

Introduction

In 1991, the expert committee of the U.S. National Institutes of Health (NIH) concluded that bariatric surgery was the most effective treatment for morbid obesity, so more and more people have resorted to this procedure to control excess weight. In 2013, the Worldwide Obesity Surgery conducted a study that noted "468,609 bariatric surgeries performed in this same year; United States and Canada, 154,276; Brazil with 86,840; France with 37,300; and Argentina with 30,378" (Angrisani et al., 2013, p.1). In 2000, the Spanish Society for the Study of Obesity (SEEDO) showed that the demand for bariatric surgeries per year in Spain is around 16,000 (Arteaga et al., 2018).

The World Health Organization (WHO) (1997) considered that "morbid obesity is *[sic]* when body mass index, *[sic]* BMI is $\geq$ 40 kg/m^2 or 35 kg/m^2 with severe clinical comorbidities" (p. 1). Likewise, that same year the WHO exposes an important concern about obesity being a multifactorial chronic disease of numerous substantial comorbidities, including a number of psychological disorders (WHO, 1997). Thus, beyond absolute weight loss, the definition of surgical success must consider the improvement of associated physical and psychological comorbidities and the patient's quality of life. Consequently, in 2009, NICE established multidisciplinary work, with the participation of the psychologist, in bariatric surgery. In 2012, it was also considered by the American Association of Clinical Endocrinologists (AACE), the American Society for Metabolic and Bariatric Surgery (ASMBS), and the American Obesity Society (TOS). In 2017, it is similarly stated by SECO (Martin, 2017; Mechanick et al., 2013; NICE, 2009).

Currently, it is observed that experimental studies, systematic reviews, and psychological care guidelines established by authorities show that cognitive behavioral therapy (CBT) presents greater empirical evidence and higher prevalence in anti-obesity treatments. In 2016, NICE considered it the Class A treatment and it occupied 60% prevalence in studies, while behavioral therapy accounted for 30%. The latter was losing its space over time in favor of CBT, specifically since 2001, when Cooper identifies that by adding cognitive techniques to behavioral therapy these seem to improve the success of surgery, reduce weight regain, and improve the psychological well-being of the patient (APA, 1998; Baile, 2019; Bunner, 2014; Cooper, 2001; NICE, 2016; Shaw et al., 2010; Wilson, 1999).

Although CBT is currently the therapy that presents the most empirical evidence for obesity, in clinical practice and scientific studies there is a great variety of strategies and resources applied to bariatric surgery patients. There is no rigorous protocol of care for this population, which is demonstrated in different tactics where interventions divided

into three large groups are observed: distance psychotherapy, group therapy, and individual therapy (Ogden et al., 2011; Shaw et al., 2010). Similarly, it is necessary to systematically and comprehensively analyze data from scientific experimental studies applying CBT to these patients in order to clarify the effectiveness of these resources and identify patterns of success and non-success.

Likewise, this study has the following objectives: to compare the different strategies employed in experimental clinical scientific studies; to identify successful and unsuccessful practices in these strategies applied to bariatric surgery patients; to understand the management of psychological comorbidities associated with obesity; and to identify assessment tools, collaborating in the treatment decision so that the psychologist's contribution is more effective and patients have better surgical outcomes and better quality of life.

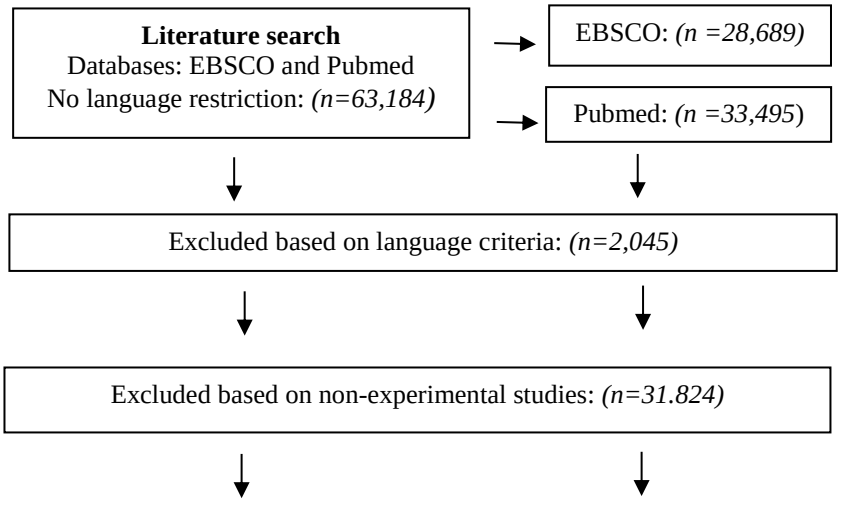
Method

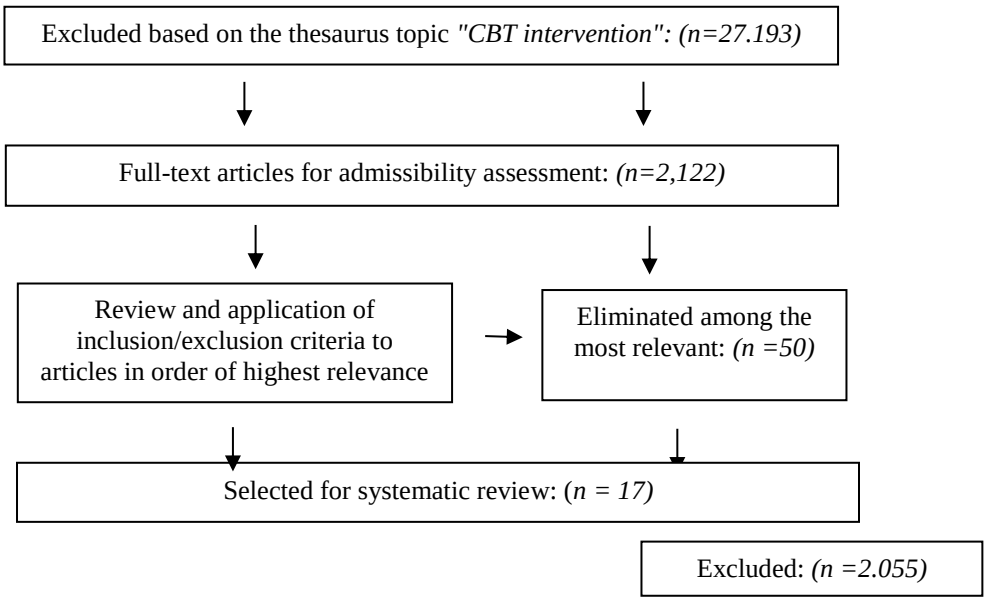
For this study we have chosen the method of systematic review of scientific articles published in the last 12 years. These articles include qualitative and/or quantitative experimental studies of clinical trials with patients of bariatric surgeries performed with the implementation of cognitive behavioral therapy (CBT) in the pre and/or postoperative period.

As documentary sources, this work has searched for scientific studies published in the Pubmed and EBSCO databases. Based on the objective of this research, a search protocol has been defined with the combination of keywords and Boolean operators as follows: ((*"cognitive behavioral therapy" OR "cognitive behavioral therapy") AND ("bariatric surgery" OR "gastric bypass surgery" OR "weight loss surgery")).*

The inclusion criteria used were: (1) that the papers dealt with experimental studies in adult patients aged 18 years and older who met the established criteria of recommendations for bariatric surgery; (2) that these experiments applied a CBT intervention in the pre and/or postoperative period; and (3) that they were experimental studies conducted with scientific methodology.

On the other hand, the exclusion criteria adopted were: (1) that they were not about clinical trial studies; (2) that they were single case studies; (3) that they were duplicate articles in the two databases; (4) that they were duplicate articles due to information updating; (5) that they were about topics unrelated to psychology; (6) that the languages were neither Spanish nor English; and (7) that they were not about CBT techniques. The following is an outline of the results of the search for articles:





Following the retrieval of these 17 articles, the second phase of this review focused on the comprehensive review of the documentary source, which was largely in English. In addition to these experimental data, this study also obtained references from other authors about the theoretical underpinnings of bariatric psychology.

The following section reports the results of this review: the demographic data found in the articles, the variables and the assessment instruments studied by the authors are shown, followed by a systematic comparative analysis of the group, individual and distance care interventions. Finally, final considerations are established with the synthesis of the main effects of CBT in its different models and of the management of psychological comorbidities in bariatric surgery.

Results

After analyzing the sociodemographic characteristics of the articles in this review, a sample of 3,688 persons was obtained, 61% of whom were female. The mean age was 43 years, with a mean BMI of 48 kg/m^2. Ninety-three percent were white and 80% were married or in a stable union. The majority were subjects with a high school or professional education. The countries present in these experiments were the United Kingdom, Spain, Germany, Italy, Norway, Canada, the United States, Mexico, Colombia, and Chile.

Some 35.29% of the studies applied CBT in the preoperative phase; another 35.29%, in the postoperative phase to assess therapeutic gains. Some 29.41% credited factors of success or non-success of the CBT intervention in the context of surgery, the efficacy of the assessment instruments and the endorsement of differentiated methods to increase the therapeutic reach in these patients. Psychological comorbidity has been the key point in all experiments. It was identified that 52.94% of the items assessed depressive symptomatology; 47.05%, EDs; 41.17%, anxiety and BMI; 35.29%, quality of life; 17.64%, stress, self-esteem, family relationships, and adherence to treatment; and 11.76%, personality traits. Table 1 shows what each article individually included and the intervention modality applied, which the authors defined basically according to the resources available and/or the objective of the study.

Table 1

Table of the psychological variables evaluated in the articles of this review, with the main objective of the author's intervention and the CBT intervention model used.

Item data	***Intervention factors***												
Author	***Type of intervention***	***Participants***	***Objectives***	***Stress***	***Anxiety***	***Depression***	***Self-esteem***	***Quality of life***	***TCA***	***Family relationships***	***Personality***	***BMI/Contour***	***Adhesion***
Abilés et al. (2010)	A	*(n=50)*	1	x	x	X	x	x	x	x	x		
Abilés et al. (2013)	A	*(n=110)*	2	x	x	x	x	x	x	x		x	
Abilés et al. (2013)	A	*(n=110)*	3	x	x	x	x	x	x	x	x		
Conceição et al. (2016).	C	*(n=180)*	1										x
Delgado et al. (2015)	A	*(n=14)*	2		x	x						x	
Garcia et al. (2012)	A	*(n=27)*	1						x			x	
Hege et al. (2014)	A	*(n=98)*	2		x	x			x				x
Kalarchian et al. (2016).	A	*(n=199)*	3								x		
Martinez et al. (2013)	A	*(n=50)*	2		x	x							
Marzocchi et al. (2008).	A	*(n=135)*	3			x		x	x				
Ogden et al. (2011)	A	*(n=10)*	1									x	
Ogden et al. (2015)	A	*(n=206)*	3									x	
Román et al. (2012)	A	*(n=50)*	2		x	x							
Rudolph and Hilbert (2020)	A	*(n=7)*	3			x		x	x				
Sierra et al. (2014)	B	*(n=15)*	2					x				x	
Sockalingam et al. (2017).	C	*(n=19)*	3						x			x	
Zhang et al. (2015)	C	*(n=2408)*	1										x

(A) Individual Face-to-Face Intervention
(B) Face-to-Face Group Intervention
(C) Online / Remote Intervention
(1) Therapeutic Outreach Expansion
(2) Comorbidity Reduction in Preoperative Intervention
(3) Comorbidity Reduction in Postoperative Intervention

Note: Own elaboration based on the cited authors.

Preoperative diagnosis is a substantial success factor, since psychological disorders have been found that, in order to avoid causing a poor prognosis for surgery, need at least one year of treatment and stability of their symptoms before the surgical procedure is performed (Clark et al., 2003). In sum, the patient must be declared able to meet the necessary dietary requirements to be able to perform the surgical procedure (Martinez et al., 2013; Marzocchi et al., 2008).

For the diagnosis of psychological comorbidities, in addition to structured, semi-structured and DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, 5th edition) based interviews, a variety of 28 types of metrics have been found to assess a minimum of nine psychological comorbidities associated with obesity. The list of these instruments, which largely relate to EDs, is in Table 2. Because of this diversity found in the articles, below, we also reference the assessment instruments mentioned by Martín et al. (2017) in the report of the Spanish Association of Surgeons (AEC), the Spanish Multimodal Rehabilitation Group (GERM), the Foundation of the Spanish Society for the Surgery of Obesity (FUNSECO), and SECO. These are:

- **General psychopathology:** Symptom Checklist-90-Revised (SCL-90-R) and Difficulties in Emotion Regulation Scale (DERS): measures that will include anxious-depressive symptomatology, general psychopathology index, and difficulties in emotion regulation, frequently present in these patients and associated with a worse prognosis (p. 18).
- **Eating psychopathology:** Eating Disorder Inventory-2 (EDI-2); Semi-Structured Clinical Interview for the Detection of an Eating Disorder (SCID-I); Alcohol Use Disorders Identification Test (AUDIT); and Yale Food Addiction Scale-2 (YFAS-2): measures that will include eating psychopathology and diagnostic criteria for both a possible co-occurring eating disorder and a possible substance use disorder or food addiction, generally associated with a higher relapse rate and worse prognosis (p. 18).
- **Personality Traits:** Temperament and Character Inventory-Revised (TCI-R) and UPPS-P (Impulsive Behavior Scale): measures that will include personality traits of temperament and character, as well as impulsive personality traits, generally associated with worse prognosis and poorer adherence (p. 18).

Table 2

Psychological assessment instruments for bariatric surgery patients found in the articles reviewed.

Psychological assessment instruments used in bariatric surgery patients

Anxiety and Depression	Abbreviated Anxiety and Depression Scale (Montón et al.); General Health Questionnaire (GHQ)
	Beck Depression Inventory I and II (BDI-I and BDI-II)
	Patient Health Questionnaire-9 for depression (PHQ-9)
	Hospital Anxiety and Depression Scale (HADS) (HADS- D) (HADS-A) State-Trait Anxiety Inventory by Spielberger, Gorsuch and Lushene (1970). STAI-E/STAI-R/(BDI-SF)
Self-esteem	Self-esteem: Rosenberg Self-Esteem Scale (RSE) (Vázquez et al.)
Quality of life	Quality of life (PGWBI). Quality of life. Obesity-specific - Impact of weight on quality of life-lite. Inventory of quality of life and health (INCAVISA) (Sánchez-Sosaet al., 2009).
	Quality of Life Index (QLI-SP) (Mezzich)
Stress	(CEDD44-B) (Sanz-Carrillo et al.)
Family	Individual and family function. (Family APGAR) (Bellón et al.)
Body Measurements	CC: Waist circumference / BMI: Body Mass Index
Others	Obesity-related well-being 97 (Orwell-97)
	DSM-IV structured and semi-structured interview
	Specific psychological variable instruments developed for Apollo - Bari.
Personality	Personality (Eysenck Personality Questionnaire-Revised)
	Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1992)
Eating disorder	Symptomatology (Eating Disorder Examination-Questionnaire, version 4) Food Craving Questionnaire-Trait (FCQ-T) (Cepeda-Benito et al.) Binge Eating Scale (BES) Eating disorder 7-item (GAD7) Three Factor Eating Questionnaire (TFEQ R-21)
	Eating Disorder Examination Interview (EDE) German version of the Eating Disorder Examination-Questionnaire (EDE-Q, version 4) (Katrine et al.) CB (EDE-BSV) QEWP-R: Questionnaire on eating and weight patterns

Source: Own elaboration based on Abilés et al. (2010), Abilés et al. (2013), Abilés et al. (2013), Conceição et al. (2016), Delgado et al. (2015), García et al. (2012), Hege et al. (2014), Kalarchian et al. (2016), Martinez et al. (2013), Marzocchi et al. (2008), Ogden et al. (2011), Ogden et al. (2015), Román et al. (2012), Rudolph and Hilbert (2020), Sierra et al. (2014), Sockalingam et al. (2017), and Zhang et al. (2015).

All studies have used cognitive restructuring as the main CBT technique for the promotion and maintenance of healthy behaviors, as well as for the reduction or elimination of undesirable behaviors and, thus, weight loss (Van Dorsten and Lindley, 2008). As main cognitive restructuring exercises, activities such as self-reporting and self-monitoring were found to be effective techniques for developing self-control. Stimulus controls and problem-solving therapy were also used to prevent relapses and

maintain social support, mainly from the family. On the other hand, in the study by Román et al. (2012), the use of progressive muscle relaxation by Jacobson et al. (2000) was evidenced; this is used following a recording with indications for relaxation exercises and psychoeducation about the change of habits and the different phases of the surgical process, contemplating from the pre to the postoperative period.

Finally, a description of the main results of the interventions studied is presented below. Table 3 shows a comparison of the main effects and results of each of the intervention modalities found in the experimental articles and in the support materials used in this review.

Table 3

Comparison of cognitive behavioral therapy intervention strategies for bariatric surgery patients.

Authors	***Type of intervention***	***Main effects / results***
Abilés et al. (2010); Delgado et al. (2015); García et al. (2012); Hege et al. (2014); Kalarchian et al. (2016); Martínez et al. (2013); Marzocchi et al. (2008); Ogden et al. (2011); Román et al. (2012); Rudolph and Hilbert (2020).	Individual Face-to-Face Intervention	a) It allows the diagnosis and effective treatment of moderate to severe psychological comorbidities that affect the prognosis of surgery. (1) High resolution, up to 88%, in preoperative studies and 94% in postoperative experiments of psychopathology of mild symptomatology. (2) b) Some patients show significant difficulty or resistance to attend sessions, especially those with mild symptomatology. c) High experimental death rate, 71%. d) High cost compared to the others.
Sierra et al. (2014); Megan (2012).	Face-to-Face Group Intervention	a) Effective in reducing mild symptomatology psychopathology. (2) However, it needs more individual support for those of moderate-severe level (1). b) Higher efficacy in weight loss and improvement of BMI compared to the other types of intervention, very important to comply with the technical conditions prior to surgery and the patient's commitment to change. c) High patient satisfaction and acceptance. d) A 40% experimental death.
Conceição et al. (2016); Sanjeev et al. (2017); Zhang et al. (2015).	Online / remote intervention	a) High rate of resolution of mild symptomatology; in some cases, for this population it was shown to be more effective in the long term than individual face-to-face intervention. No data have been observed for this intervention for moderate-severe comorbidities. b) Increased accessibility, reach and adherence to treatment, with a lower number of experimental deaths

compared to the other models, this being 20%.
c) Improved BMI, even in the long term.
d) High patient satisfaction and acceptance.
e) Lower cost.

(1) - Moderate-severe symptomatology: (DSM-5) personality disorders, bulimia, anorexia, schizophrenia, abuse, and major depression.

(2) - Moderate-mild symptomatology: anxiety, depression, quality of life, stress, ED, self-esteem, motivation.

Note: Own elaboration based on the cited authors.

These data have allowed us to observe different levels of efficacy for the different intervention models, weighted together with the individual patient profile and the comorbidity involved. Thus, Table 4 represents the main effects of psychological comorbidities and other important psychological factors in the context of bariatric surgery and CBT intervention management, according to all the literature found for this work.

Table 4

The management of psychological comorbidities associated with obesity in the context of bariatric surgery and CBT intervention.

Authors	**Psychological comorbidity**	**Association with surgical success/non-success**	**CBT intervention**
Black et al. (2003); Clark et al. (2003); Kalarchian et al. (2016); NICE (2016); SEEDO (2000).	Bulimia, suicide rate, schizophrenia, substance addictions, bipolar and anorexia.	These patients have been shown to be unable to comply with postoperative restrictions because of unsatisfactory weight reduction (less than 50% reduction in excess weight was seen). In addition, the absorption of psychiatric medication may not be sufficient after surgery, impairing postoperative treatment.	Need for preoperative intervention until symptoms are controlled and stabilized. Treatment recommended one year before surgery and up to two or three years after surgery.
Clark et al. (2003); Goldman (2014); NICE (2016); SEEDO (2000).	Major depression	It is related to a lower long-term weight loss and to other comorbidities, such as ED, and a lower quality of life. It is more prevalent in obese people with BMI over 40 than in moderately obese people.	Need for preoperative intervention until symptoms are controlled and stabilized one year before surgery is recommended. Individual face-to-face intervention is the most recommended until symptoms are stabilized.
Abilés et al. (2010); Abilés et al. (2013); García et al. (2012); Hege et al. (2014); Marzocchi et	Binge eating disorder	This is the highest psychological comorbidity among the morbidly obese and can reach 50%. It is usually accompanied by depression, anxiety, major depression, lower self-esteem, and low quality of life in up to 16% of cases. Some studies show a great	Need for preoperative intervention for the period necessary to reduce severe symptoms before recommending surgery. Need for continuous long-term

al. (2008); Rudolph and Hilbert (2020); Sockalingam et al. (2017).		difficulty in postoperative adaptation, with less weight loss. Other studies do not confirm a difference regarding weight loss with those without ED, both with CBT intervention. They also showed greater concern about food and weight and revealed feeling more hunger, fear, guilt, and worries about shape and food intake after surgery.	monitoring and follow-up after surgery.
Abilés et al. (2010); Abilés et al. (2013); Delgado et al. (2015); Hege et al. (2014); Martínez et al. (2013); Marzocchi et al. (2008); Román et al. (2012); Rudolph and Hilbert (2020).	Anxiety and depression	They can make postoperative adaptation difficult and have poorer surgical outcomes. Social support is very important for these patients. There is a 48% prevalence of surgical patients suffering from anxiety, and 50% of female surgical candidates have been previously medicated with antidepressants. Sixteen percent of these patients may progress to ED.	Need for preoperative intervention for approximately five months or until symptoms stabilize. Need for constant follow-up and diagnosis of other associated psychological comorbidities, such as ED.
Black et al. (2003); Clark et al. (2003); Guisado and Vaz (2002); Kalarchian et al. (2016); Tsushima et al. (2004).	Personality disorder	May present results of less than 50% of excess weight (paranoid hysteria and health-related scales).	Need for preoperative intervention until symptoms are controlled and stabilized for an average of one year.
Fernández (2008)	Intrinsic motivation	If motivation is high, it promotes improved adherence to treatment; if it is low, there is difficulty in decision making regarding surgery and in implementing BC restrictions.	Need for preoperative intervention, without having to wait for results for surgery. Need for constant follow-up and diagnosis of other psychological comorbidities, such as ED.

Ray et al. (2003); Marzocchi et al. (2008); NICE (2016).	Social support	Very important to collaborate when mild symptomatology occurs, which contributes to treatment. If not high, it can lead to weight gain two years after surgery and contribute to future bad habits.	Need for preoperative intervention, without having to wait for results for surgery. Need for constant follow-up and diagnosis of other psychological comorbidities, such as ED.
Ogden (2011); SEEDO (2007);	Patient's own capacity	This component includes patients who report difficulties in adapting to postoperative restrictions unrelated to psychological disorders.	Need for intervention to work on strengths and adaptation needs from the preoperative period without the need to postpone surgery.
Marzocchi et al. (2008).	History of trauma or abuse	It has been identified that abuse, mainly sexual, may have an impact on obesity and binge eating behaviors or difficulty in postoperative adjustment.	Good efficacy, with the need for preoperative intervention until symptoms are controlled and stabilized for one year.
Clark et al. (2003); Martinez et al. (2013); Marzocchi et al. (2008).	Intellectual disability	It is necessary that the patient has the conditions to assume the change of habits demanded by the surgery. In case he/she is not able to become aware of it, it is recommended to guide the family and that they sign the responsibility.	Need for parental consent and preoperative CBT intervention, without the need to postpone surgery.
Abilés (2010); Goldman (2014).	Degree of obesity	Higher anxiety and prevalence of major depression in obesity grade IV.	Regardless of the degree of obesity (grade III and IV were compared, with no differences observed), CBT intervention has the same result in mild symptomatology.
Fernandez (2008); Grilo and Masheb (2005); Mitchell et al, (2001)	Self-esteem	Low self-esteem is associated with a high level of binge eating and body dissatisfaction before and after surgery: before, due to excess weight, and after, due to excess skin. High prevalence in the female sex.	Effectiveness of CBT for the improvement of self-esteem and self-image. Surgery does not change self-esteem; this factor should be worked on together with the patient when he/she presents low indices.
Fernández (2008); Mitchell et al. (2001);	Body image	Relation with a high rate of binge eating. Very frequent in women, hence the high percentage of female sex. Body image is associated with a high depression score, low self-esteem, or perfectionism. Expectations of reconstructive surgery.	CBT intervention for self-image improvement without restricting surgical recommendation.

Source: Own elaboration based on the cited authors.

These analyses allow us to conclude that the different modalities of CBT used

with bariatric surgery patients, divided into individual face-to-face, group and online treatment, could be used in a combined or preferential way according to the patient's diagnosed symptomatology. First, it is necessary to rule out the presence of serious comorbidity that would prevent requesting surgery for the patient, in addition to always monitoring the evolution of the symptomatology in all of them, regardless of their level, since its severity may vary. The individual intervention strategy was shown to be the most appropriate for treating patients with more severe comorbidities, as it showed positive effects during a year of treatment before surgery and managed to avoid poor postoperative results.

On the other hand, this same individual strategy revealed very low adherence in patients who do not present severe symptomatology and would not be the most appropriate for this population. Patients who do not present symptomatology severe enough to discourage the surgical procedure, but who also present comorbidities that hinder adaptation to surgery, should be offered support for a better prognosis of the surgery. Group CBT intervention strategies provide efficacy to this population, mainly with respect to the following elements: technical improvement of physical preparation for bariatric surgery, so important in these cases of morbid obesity; better adaptation to postoperative restrictions; and reduction of psychological comorbidity symptomatology. Likewise, online or distance strategies can also be used with these latter patients by providing greater scope and adherence to long-term continuous treatment so important for the bariatric patient.

The group and online therapy resources showed great efficacy for mild to moderate symptomatology present and offered even better results than the individual care strategy, both in the effects of comorbidities and in greater weight loss and maintenance in the long term. After observing a constant variability in the degree and symptomatology affecting these patients throughout the different phases of bariatric surgery, it is suggested that the efficacy of these two methods is always conditioned by the psychologist's periodic consideration of the patient's individual circumstances in relation to the associated comorbidities and his or her personal capacity to adapt to the surgical postoperative period. It can be concluded that a combined model of strategies for continued monitoring over time would be most efficient.

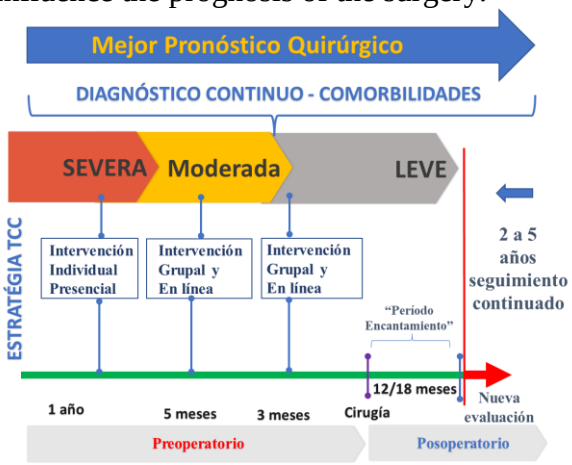
Following the analysis of this instability related to the psychological comorbidities associated with the different phases of the CB procedure and the effects that psychoaffective comorbidities exert on the results of surgery, treatments for mild and moderate comorbidities should be initiated at least three to five months before surgery and up to two years after surgery has been performed. Thus, it can be concluded that online care offers great benefits by presenting better long-term adherence and should be considered as part of this set of strategies for greater continuity of psychotherapeutic follow-up by avoiding poorer long-term surgical outcomes.

An important effect observed is that weight loss after CB can also improve the psychological comorbidity of patients. After undergoing surgery, they go through a period of great physical and psychological improvement that lasts between 12 and 18 months approximately; after this period, a decrease in well-being conditions may be reflected and there may even be weight regain. This represents an increase in symptomatology and psychological support is needed so that it does not affect the results of CB.

In addition, as a final factor, patients often view surgery as the only remedy for overcoming obesity and often experience the postoperative period as an illusion that surgery has solved all their problems, followed by frustration and the need for support.

The sum of all these components underscores the importance of choosing multiple strategies for effective ongoing follow-up.

Finally, it has been observed that the psychological factors of the patient with the best prognosis for surgical outcomes are the following: no moderate or severe psychological comorbidity; coping skills and emotional regulation, especially of their self-image and self-esteem, which were the origin of much of the symptomatology of these patients; they must always be focused, with social support and motivation; they have a good understanding of the surgical process; and they have the ability to adapt to the restrictions that surgery entails. Thus, a proposal of how a structured strategic care plan for bariatric surgery patients could be realized is shown in Figure 1. It considers the prevalent comorbidities, the different CBT modalities found in the studies and the observed concepts that offer greater efficacy, by reducing symptomatology to allow surgery and performing a continuous assessment well before surgery up to a long term afterwards, which may influence the prognosis of the surgery.



(1) - Moderate-severe symptomatology: (DSM-5) personality disorders, bulimia, anorexia, schizophrenia, abuse, and major depression.
(2) - Moderate to mild symptomatology: anxiety, depression, quality of life, stress, ED, self-esteem, motivation.

Figure 1. *Strategic plan for the choice of modality and periods of CBT for bariatric surgery patients. Proposal for combined and continued care.*

Note: Own elaboration based on the authors cited in Table 3.

Discussion and conclusions

After the study of the different CBT strategies applied in bariatric patients, it could be concluded that the selection of resources according to the psychological comorbidity of the patient in each phase of the surgery context could increase the efficacy of the treatment. Thus, it would justify the need for future clinical trials to comply with this intervention approach from preoperative (up to one year before surgery) to long-term follow-up (for a minimum of two years after this procedure has been performed). Thus, it would be possible to design a series of strategies for the moments in which a greater need for support in this process was observed; this could avoid a poor prognosis of the

surgery since it has been seen that 20 to 50% of patients have inadequate weight loss or weight regain after 2 to 3 years of having performed bariatric surgery (Magro et al., 2008; Ogden et al., 2015; Van Hout et al., 2008). Furthermore, the Magro et al. (2008) study found that "approximately 30% of individuals need repeat surgery to achieve sufficient weight loss of at least 50% of excess weight" (p. 648). This value would be the minimum adequate value considered by NICE (2009) (Van Hout et al., 2008).

Likewise, to avoid control bias, it is recommended that future studies offer the control group the nutritional education received by the experimental group; the objective is that the effects of the nutrition team do not intervene in the evaluation of CBT results, once it has been concluded that this information received also generates changes in the patient. Similarly, it is necessary to consider the effect of complex comorbidities that existed before surgery, as well as the way in which the individual adjusts to the CBT process, in order to provide a real assessment of the therapeutic gains, of the effects of CBT, and of the general and specialized care models that could be considered.

Finally, it has been noted that the empirical evidence barely includes multidisciplinary responses, and far less is known about the use of preoperative psychological profiles to predict surgical outcome. This would also contribute to a better intervention proposal and, perhaps, suggest future studies for a bolder proposal of a continued, individualized, and standardized program. Finally, a complete program with different projects could be proposed according to the patient's ongoing diagnosis and choice of strategic resources. Assessment instruments with global standards would be used with the aim of collaborating to achieve more effective psychological care and a better prognosis of surgery.

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