

Trajectory of depressive and anxious symptoms in patients with pre-existing diagnosis undergoing bariatric surgery: Systematic review and meta-analysis protocol

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Abstract

Background: Severe obesity is a chronic and multifactorial condition associated with significant physical and psychological impacts, including high rates of depression and anxiety. Bariatric surgery is recognized as the most effective treatment for cases of severe obesity, promoting sustained weight loss, improvement of comorbidities, and enhancement of quality of life. However, the trajectory of psychological symptoms after the procedure is still uncertain, especially among patients who already experienced emotional distress before the surgery. **Objective:** This systematic review and meta-analysis protocol aims to synthesize evidence on the changes in depression and anxiety levels in adults with severe obesity and pre-existing symptoms undergoing bariatric surgery. **Methods:** Longitudinal cohort studies, either prospective or retrospective, that assess symptoms of depression and anxiety before and after surgery, using validated psychometric instruments such as the Beck Depression Inventory, Hospital Anxiety and Depression Scale, Beck Anxiety Inventory, and Generalized Anxiety Disorder-7, will be included. The search will be conducted in the PubMed, Web of Science, and Scopus databases, without language restrictions, starting from June 26, 2025. The methodological quality will be assessed using the Newcastle-Ottawa Scale, and the quantitative synthesis will be conducted thru a random-effects meta-analysis when there is homogeneity among the studies. **Conclusion:** It is expected that this review will provide consistent evidence on the evolution of depressive and anxious symptoms after bariatric surgery, contributing to the improvement of psychological follow-up strategies and strengthening the comprehensive care of patients with severe obesity.

Keywords: Bariatric surgery; obesity, morbid; depression; anxiety; postoperative period.

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BACKGROUND

Severe obesity is a chronic and multifactorial condition, marked by metabolic, cardiovascular, and psychological dysfunctions that significantly compromise health and quality of life. It is estimated that more than 650 million adults worldwide live with obesity, which represents one of the greatest global public health challenges¹.

In addition to physical comorbidities, there is consistent evidence of a strong association between obesity, depression, and anxiety, forming a bidirectional relationship: while psychological distress can contribute to weight gain and maintenance, excess weight and social stigma intensify emotional symptoms²⁻⁴.

Bariatric surgery is recognized as the most effective available treatment for cases of severe obesity, promoting sustained weight loss, improvement of comorbidities, and reduction of mortality^{5,6}. In addition to the physical benefits, evidence indicates that the surgery can also reduce symptoms of depression and anxiety and improve psychological well-being^{7,8}. However, these results are not uniform among all patients. Individuals diagnosed with affective disorders or clinically relevant emotional symptoms before surgery may exhibit distinct trajectories of psychological recovery. In some of these cases, an improvement in symptoms is observed after surgery; in others, signs of persistence or worsening of psychological distress are noted^{9,10}.

Despite the growing scientific interest in the interface between bariatric surgery and mental health, the literature presents limited systematic reviews on the evolution of depression and anxiety symptoms in patients with pre-existing psychological distress. Previous studies analyzed general samples of patients undergoing bariatric surgery or the emergence of new disorders, without distinguishing those who already exhibited these symptoms before the procedure^{11,12}.

Given this gap, this protocol proposes a systematic review and a meta-analysis to understand whether the levels of depression and anxiety change after bariatric surgery in adults with severe obesity who had these symptoms previously diagnosed or identified by validated scales. The synthesis of the data aims to provide evidence that contributes to the improvement of the planning of psychological follow-up in the pre and post-operative periods, strengthening attention to this population of greater emotional vulnerability.

METHODS

This systematic review and meta-analysis protocol was developed in accordance with the guidelines of the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA). The protocol was registered on the International Prospective Register of Systematic Reviews (PROSPERO) platform under the number CRD420251085074.

2.1. Eligibility Criteria

2.1.1. Types of Studies

Longitudinal cohort studies, whether prospective or retrospective, that assess symptoms of depression and anxiety in patients undergoing bariatric surgery will be included. The studies must present pre- and post-operative psychological assessments, al-

lowing for the comparison of emotional state before and after the procedure. Studies with samples composed of adults (≥ 18 years) that use validated psychometric instruments for symptom measurement will be eligible. Randomized clinical trials, case-control studies, case reports or series, reviews, comments, editorials, and other designs that do not present pre- and post-operative comparative measures will be excluded.

2.1.2. *Types of Participants*

Adult patients with severe obesity ($\text{BMI} \geq 35 \text{ kg/m}^2$) undergoing any type of bariatric surgery will be included. Participants must have previously diagnosed depression and anxiety, according to formal criteria (DSM, ICD, or structured clinical interviews), or clinically significant symptoms identified by validated scales, such as the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI), the Hospital Anxiety and Depression Scale (HADS), or the Generalized Anxiety Disorder-7 (GAD-7). Studies that include only participants without pre-existing psychological symptoms will be excluded.

2.1.3. *Intervention*

Any bariatric surgery procedures will be considered, including Roux-en-Y Gastric Bypass, Vertical Sleeve Gastrectomy, Adjustable Gastric Band, or other recognized techniques. The intervention must have been performed as treatment for severe obesity, with documented clinical and psychological follow-up.

2.1.4. *Comparator*

The comparator will be the pre-operative state of the same participants.

Only studies that present psychological evaluations at least at two distinct times, before and after the surgery, with a minimum follow-up period of 6 months, will be included.

2.1.5. *Outcomes*

Change in depression and anxiety scores, measured by validated psychometric scales, between the preoperative assessment and at least one postoperative follow-up point, with a minimum period of 6 months.

2.2. **Search Strategy**

A systematic search for studies published in the PubMed, Web of Science, and Scopus databases will be conducted starting from June 26, 2025, without language restrictions. The complete search strategies for each database are presented below, ensuring transparency and reproducibility in the process of identifying the studies.

PubMed ("Bariatric Surgery"[Mesh] OR "Gastric Bypass"[Mesh] OR "Gastroplasty"[Mesh] OR bariatric surgery[tiab] OR gastric bypass[tiab] OR sleeve gastrectomy[tiab] OR metabolic surgery[tiab]) AND ("Depression"[Mesh] OR "Depressive Disorder"[Mesh] OR "Anxiety"[Mesh] OR "Anxiety Disorders"[Mesh] OR depression[tiab] OR depressive disorder[tiab] OR anxiety[tiab] OR anxiety disorder[tiab] OR psychiatric[tiab] OR mental health[tiab]) AND (preoperative[tiab] OR pre-operative[tiab] OR preexisting[tiab] OR pre-existing[tiab] OR baseline[tiab] OR "history of"[tiab])

Web of Science (TI=("Bariatric Surgery" OR "Gastric Bypass" OR Gastroplasty OR "sleeve gastrectomy" OR "metabolic surgery") OR AB=("Bariatric Surgery" OR "Gastric Bypass" OR Gastroplasty OR "sleeve gastrectomy" OR "metabolic surgery")) AND (TI=(Depression OR "Depressive Disorder" OR Anxiety OR "Anxiety Disorders" OR psychiatric OR "mental health") OR AB=(Depression OR "Depressive Disorder" OR Anxiety OR "Anxiety Disorders" OR psychiatric OR "mental health")) AND (TI=(preoperative OR "pre-operative" OR preexisting OR "pre-existing" OR baseline OR "history of") OR AB=(preoperative OR "pre-operative" OR preexisting OR "pre-existing" OR baseline OR "history of"))

Scopus (TITLE-ABS-KEY ("Bariatric Surgery" OR "Gastric Bypass" OR "Gastroplasty" OR "sleeve gastrectomy" OR "metabolic surgery")) AND (TITLE-ABS-KEY (Depression OR "Depressive Disorder" OR Anxiety OR "Anxiety Disorders" OR psychiatric OR "mental health")) AND (TITLE-ABS-KEY (preoperative OR "pre-operative" OR preexisting OR "pre-existing" OR baseline OR "history of"))

2.3. Data Collection and Analysis

2.3.1. Selection of Studies and Data Extraction

Two independent reviewers will carry out the screening process of titles and abstracts, followed by the evaluation of full texts, using a systematic review software platform (e.g., Rayyan). Discrepancies will be resolved by consensus or with the help of a third reviewer. The data will be extracted independently and in duplicate by two

CONCLUSION

Symptoms of depression and anxiety are prevalent among individuals with severe obesity and influence both clinical outcomes and psychosocial adjustment after bariatric surgery^{2,3,4}. Although the procedure is widely recognized as the most effective treatment for severe obesity, promoting sustained weight loss, remission of metabolic comorbidities, and improvement in quality of life^{5,6}, the results related to mental health remain inconsistent. The available evidence indicates divergent results regarding the trajectory of depressive and anxious symptoms after bariatric surgery. This variability may be associated with multiple factors, such as differences in the initial severity of symptoms, the presence of social support, and expectations regarding the outcomes of the procedure. Moreover, biological aspects, such as hormonal and metabolic changes resulting from the surgery, and methodological variations between studies, can also explain the inconsistency of the findings⁷⁻¹⁴.

Given this scenario, the present systematic review and meta-analysis aims to integrate the available longitudinal evidence, contributing to a more consistent understanding of the emotional trajectory of patients with pre-existing depression and anxiety who have undergone bariatric surgery. The application of a rigorous methodology and well-defined eligibility criteria will allow for the identification of patterns in emotional evolution, providing support for the improvement of psychological follow-up strategies.

Despite its relevance, some limitations are expected, such as the heterogeneity among the included studies, resulting from differences in the types of surgery, psychometric scales, and follow-up periods¹¹⁻¹⁴. Such variabilities may restrict the conduct of the meta-analysis and impact the overall certainty of the evidence, as assessed by the GRADE system.

In summary, this review has the potential to offer relevant evidence on changes in depressive and anxious symptoms in patients with severe obesity, contributing to the qualification of psychological care in the pre and post-operative periods and to more comprehensive attention to this population with greater emotional vulnerability.

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