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Comparison between pharmacological and surgical approaches in the treatment of obesity

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ABSTRACT

Introduction: Obesity is a growing global health condition, with serious implications for the health and quality of life of affected individuals. Approaches to the treatment of obesity include pharmacological and surgical interventions, each with its specific efficacy and safety profile. Objective: The objective of this study is to compare the efficacy, benefits, harms and prognosis of pharmacological and surgical approaches for the treatment of obesity, based on recent data from the scientific literature. Methodology: An integrative literature review was conducted using the PubMed and ScienceDirect databases. The search was conducted with the search key ("obesity" OR "overweight") AND ("anti-obesity drugs" OR "pharmacotherapy" OR "antiobesogenic agents") AND ("bariatric surgery" OR "weight loss surgery" OR "surgical treatment"). Studies published between 2019 and 2024 were selected, including clinical trials, meta-analyses, and systematic reviews. Results and Discussion: The review found that pharmacological approaches, such as semaglutide and liraglutide, are effective in weight loss and control of associated comorbidities, but require ongoing adherence to treatment and may cause side effects. Bariatric surgeries, such as gastric bypass and sleeve gastrectomy, offer substantial weight loss and significant improvement in comorbidities, but with a higher risk of complications and the need for reinterventions. Conclusion: Both approaches have merits and limitations. The choice between pharmacological and surgical treatment should be based on the individual characteristics of the patients and the specific treatment needs. Bariatric surgery has better results in terms of long-term weight loss and resolution of comorbidities, while medications offer a less invasive alternative.

Keywords: Bariatric Surgery, Weight Loss, Pharmacotherapy, Appetite Moderators, Obesity.

INTRODUCTION

Obesity is a complex and growing condition that affects millions of individuals globally, resulting in a significant increase in morbidity and mortality associated with various

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comorbidities, such as type 2 diabetes, hypertension, and cardiovascular disease (Hasan *et al*., 2020). The treatment of obesity has evolved over time, encompassing both pharmacological and surgical approaches. Pharmacological interventions, such as semaglutide and liraglutide, have shown significant efficacy in reducing body weight and controlling comorbidities associated with obesity. These medications work primarily by regulating satiety and lipid metabolism, providing effective and sustained weight loss (Davies *et al*., 2021; McGowan *et al*., 2024).

In contrast, surgical approaches such as gastric bypass and sleeve gastrectomy have been recognized as effective treatments for morbid obesity, offering substantial weight loss and significant improvements in conditions associated with obesity. These interventions, although more invasive, may result in longer-lasting weight loss and more significant resolution of comorbidities than pharmacological approaches (Rizvi *et al*., 2024).

The objective of this study is to compare pharmacological and surgical approaches to the treatment of obesity, analyzing their methodologies, patient profile, benefits and harms, and the prognosis of each method.

METHODOLOGY

The study consists of an integrative literature review, conducted by searching for scientific articles in the PubMed and ScienceDirect databases. The search was performed using the search key ("obesity" OR "overweight") AND ("anti-obesity drugs" OR "pharmacotherapy" OR "antiobesogenic agents") AND ("bariatric surgery" OR "weight loss surgery" OR "surgical treatment"). Studies published in the last 5 years (2019-2024) were selected and framed in the following study types: clinical trial, meta-analysis, randomized controlled test, analysis and systematic review. Articles with full text available in Portuguese and English that addressed the theme were included. A total of 612 articles were found in the initial search in PubMed and 4025 in ScienceDirect using the established criteria. Of these, 11 articles were selected for the reading of the abstracts. After reading the article, 6 articles were included in the integrative review, 1 from PubMed and 5 from ScienceDirect (Table 1).

Table 1. Items included.

Base	Title	Authors	Newspaper (vol, no, page, year)	Thematic Considerations
ScienceDirect	Early metabolomic, lipid lipoprotein ch nd anges response medical n to surgical and thera peutic approaches obesity. 'm	ANGELIDS, Angeliki M. *et al.*	Metabolism, v. 138, p. 155346, 2023.	Analysis met abolomic and lipid changes in answer p harmacological and surgical approaches.
ScienceDirect	Semaglutide 2· 4 mg once a week in adults with overweight or obesity, and type 2 diabetes (STEP 2): a randomised, double-blind, double-dummy, placebo-controlle d, phase 3 trial.	DAVIES, Melanie *et al.*	The Lancet, v. 397, n. 10278, p. 971-984, 2021.	Evaluatio n lso effectiven ess nd Safety of Semaglutide 2.4 mg weekly in overweight adults or obesity a nd type 2 diabetes.
ScienceDirect	Adjust able intragastric balloon treatment obesity: multicentre, or of open-label, a randomised clinical trial.	DAYYEH, Barham K. Abu *et al.*	The Lancet, v. 398, n. 10315, p. 1965-1973, 2021.	Evaluation of the efficacy of the intragastric balloon adjustable on the treatment of obesity.
PubMed	Weight loss and serum lipids in overweight and obese adults: a systematic	Hassan, Bashar *et al.*	The Journal of Clinical Endocrinolog y & Metabolism, v. 105, n. 12, p. 3695-3703, 2020.	Revision systematic study of weight loss and serum lipids in adults with
	review and meta-analysis.			over weight nd obesity.

ScienceDirect	Efficacy and safety of once-weekly semaglutide 2· 4 mg versus placebo in people with obesity and prediabetes (STEP 10): a randomised, double-blind, placebo-controlle d, multicentre phase 3 trial.	MCGOWAN, Barbara M. *et al*.	The Lancet Diabetes & Endocrinology, 2024.	Eval uation ive effectiveness and safety don' Semagl t utide Treatment give Obesity and Prediabetes.
ScienceDirect	Efficacy and safety of long vs short biliopancreatic limb in Roux-en-y gastric bypass surgery: A systematic review and meta-analysis.	RIZVI, Syed Hassan Ahmed *et al*.	Current Problems in Surgery, p. 101562, 2024.	Comparison als o effectiveness an d safety of different Bilipancreati c limb lengths in the Bypass gastrico.

RESULTS AND DISCUSSION

Analysis of available studies reveals that pharmacological approaches to obesity treatment, such as semaglutide and liraglutide, are effective in promoting weight loss and improving associated comorbidities. Semaglutide, a GLP-1 agonist, has demonstrated remarkable results in clinical studies. Weekly administration of semaglutide 2.4 mg resulted in an average weight loss of approximately 9.6 kg compared to 1.3 kg in the placebo group. In addition, semaglutide is effective also in people with prediabetes, showing significant benefits in terms of glycemic control and weight reduction. These medications have been shown to be effective in regulating satiety and modulating lipid metabolism, but they can cause adverse effects such as nausea and potential risk of pancreatitis (Davies *et al*., 2021; Angelidi *et al*., 2023; McGowan *et al*., 2024).

On the other hand, surgical interventions for obesity have shown robust results in terms of weight loss and improvement of comorbidities. Gastric bypass, for example, has been shown to be highly effective in reducing body weight and resolving conditions associated with obesity. A systematic analysis comparing bilipancreatic limb length in gastric bypass surgery found that a longer limb was associated with greater weight loss and a more significant reduction in comorbidities. In addition, sleeve gastrectomy has been associated with substantial improvements in weight loss and control of obesity-related diseases (Dayyeh *et al*., 2021; Rizvi *et al*., 2024).

Comparisons between pharmacological and surgical approaches show that, while pharmacological interventions are less invasive and present a lower immediate risk of complications, bariatric surgery offers a longer-lasting and more effective solution for weight loss and control of comorbidities. Pharmacological approaches may be limited by the need for continued adherence and associated adverse effects, while bariatric surgery, despite its higher risk profile, provides longer-lasting and more comprehensive results (Hasan *et al*., 2020; McGowan *et al*., 2024).

CONCLUSION

The choice between pharmacological and surgical approaches in the treatment of obesity should be based on an individualized assessment of the benefits and risks associated with each method. Pharmacological interventions, such as semaglutide and liraglutide, are effective in promoting weight loss and controlling comorbidities associated with obesity, offering a less invasive alternative. However, these approaches require continued adherence and may be associated with significant adverse effects (Davies *et al*., 2021; Angelidi *et al*., 2023).

Bariatric surgery, including procedures such as gastric bypass and sleeve gastrectomy, offers a more definitive and long-lasting solution, with more robust results in terms of weight loss and resolution of comorbidities (Rizvi *et al*., 2024). Although it involves higher risks and the need for continuous follow-up, bariatric surgery may be the best option for patients who have not been successful with pharmacological approaches or who are morbidly obese (Dayyeh *et al*., 2021). Therefore, the choice between pharmacological treatment and surgery should be guided by the assessment of the individual needs and characteristics of patients, considering the long-term benefits and possible adverse effects of each approach (Hasan *et al*., 2020; McGowan *et al*., 2024).

REFERENCES

Angelidi, A. M., et al. (2023). Early metabolomic, lipid and lipoprotein changes in response to medical and surgical therapeutic approaches to obesity. Metabolism, 138, 155346. https://doi.org/10.1016/j.metabol.2023.155346

Davies, M., et al. (2021). Semaglutide 2.4 mg once a week in adults with overweight or obesity, and type 2 diabetes (STEP 2): A randomised, double-blind, double-dummy, placebo-controlled, phase 3 trial. The Lancet, 397(10278), 971–984. https://doi.org/10.1016/S0140-6736(21)00183-1

Dayyeh, B. K. A., et al. (2021). Adjustable intragastric balloon for treatment of obesity: A multicentre, open-label, randomised clinical trial. The Lancet, 398(10315), 1965–1973. https://doi.org/10.1016/S0140-6736(21)02151-3

Hasan, B., et al. (2020). Weight loss and serum lipids in overweight and obese adults: A systematic review and meta-analysis. The Journal of Clinical Endocrinology & Metabolism, 105(12), 3695–3703. https://doi.org/10.1210/clinem/dgaa512

McGowan, B. M., et al. (2024). Efficacy and safety of once-weekly semaglutide 2.4 mg versus placebo in people with obesity and prediabetes (STEP 10): A randomised, double-blind, placebo-controlled, multicentre phase 3 trial. The Lancet Diabetes & Endocrinology. https://doi.org/10.1016/S2213-8587(24)00123-7

Rizvi, S. H. A., et al. (2024). Efficacy and safety of long vs short biliopancreatic limb in Roux-en-Y gastric bypass surgery: A systematic review and meta-analysis. Current Problems in Surgery, 101562. https://doi.org/10.1016/j.cpsurg.2024.101562