

Ozempic's Odyssey: The Role of GLP-1 Receptor Agonists in Managing Binge Eating Disorder and Associated Metabolic Complications - Insights from a Comprehensive Literature Review

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Introduction

- Binge Eating Disorder (BED)** is the most common eating disorder, characterized by recurrent episodes of excessive food consumption accompanied by loss of control and psychological distress.
- BED is linked to significant health complications, including:
 - Obesity**
 - Metabolic Syndrome**
 - Decreased Quality of Life**
- Traditional treatments often combine:
 - Behavioral therapy
 - Nutritional counseling
 - Pharmacotherapy
- GLP-1 receptor agonists**, originally developed for type 2 diabetes, are gaining attention for:
 - Promoting satiety and weight loss
 - Modulating brain pathways linked to disordered eating
- Emerging evidence suggests GLP-1 agonists, such as **semaglutide** and **liraglutide**, may help reduce binge episodes while improving metabolic outcomes.
- This review aims to evaluate:
 - The efficacy and safety of GLP-1 receptor agonists in BED
 - Their impact on weight loss and metabolic markers
 - Gaps in the literature and directions for future research

Methods

Search Strategy:

- Conducted on **03/26/2024** using three academic databases: **PubMed, Embase, and PsycINFO**.
- Search Terms Used:** (((Binge Eating Disorder) AND (Obesity)) AND (GLP-1 receptor agonist)) OR (Liraglutide) OR (Semaglutide).

Screening and Selection Process (Figure 1) (Table 1)

Data Analysis and Quality Assessment

- Quality Review:** Two independent reviewers screened and assessed quality for all studies.
- Guidelines Followed:** PRISMA guidelines for systematic and transparent data synthesis.

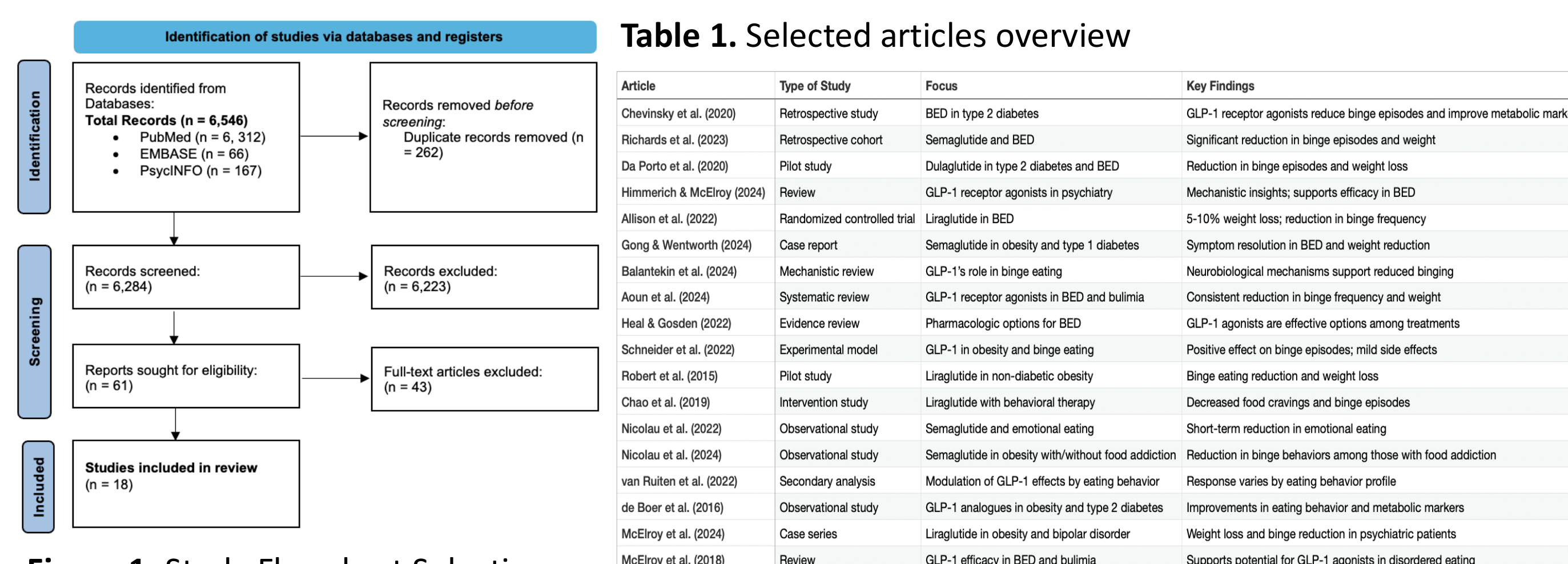


Figure 1. Study Flowchart Selection

Results

The 18 selected studies demonstrate promising effects of GLP-1 receptor agonists on reducing binge-eating episodes, managing weight, and improving metabolic health in patients with BED and related conditions.

Key Findings – Organized into Subsections

Reduction in Binge-Eating Episodes

• **Number of studies reporting reduction:** 12 out of 18 studies.

• Example Findings:

- Richards et al. (2023) and Allison et al. (2022):* Significant reductions in binge frequency with semaglutide and liraglutide.
- Gong & Wentworth (2024):* Notable improvements in binge-eating episodes within the first few months of semaglutide treatment.

Weight Management and Reduction

• **Number of studies reporting weight loss:** 15 out of 18 studies.

• Example Findings:

- Allison et al. (2022):* 60% of participants lost at least 5% of baseline weight.
- Chao et al. (2019):* Combined liraglutide and behavioral weight loss intervention led to significant weight reduction and improved eating behaviors.

Metabolic Health Improvements

• **Number of studies reporting metabolic benefits:** 10 out of 18 studies.

• Example Findings:

- Chevinsky et al. (2020) and Richards et al. (2023):* Reduced HbA1c levels and improved lipid profiles in BED patients with type 2 diabetes.
- de Boer et al. (2016):* Observed insulin sensitivity improvements, supporting the dual benefit of GLP-1 receptor agonists.

Treatment Response Variability

• **Number of studies reporting:** 8 out of 18 studies

• Observations:

- Studies, including *Himmerich & McElroy (2024) and van Ruiten et al. (2022)*, noted that response to treatment varied by baseline BMI, eating behavior, and comorbidities.
- McElroy et al. (2024):* Reported positive outcomes for binge eating in patients with stable bipolar disorder, showing promise for GLP-1 use in complex psychiatric cases.

Adverse Effects and Tolerability

• Common Side Effects:

- Schneider et al. (2022) and Robert et al. (2015):* Gastrointestinal symptoms were most common but generally well-tolerated.

• **Overall Tolerability:** Most studies concluded that GLP-1 receptor agonists are safe for longer-term use, even with mild side effects.

Discussion

1. Efficacy in Binge Eating Disorder (BED)

- **Key Finding:** GLP-1 receptor agonists (e.g., semaglutide, liraglutide) reduce binge-eating episodes in BED.
- **Mechanism:** Influence appetite and reward pathways, addressing both psychological and physiological drivers of binge eating.

2. Dual Benefits on Weight and Metabolic Health

- **Weight Loss:** 5-10% body weight reduction in most studies.
- **Metabolic Improvements:** Lower HbA1c and improved lipid profiles, especially in patients with type 2 diabetes.
- **Implication:** Provides a comprehensive approach by targeting both eating behaviors and metabolic health in BED patients.

3. Personalized Treatment Potential

- **Response Variability:** Different outcomes based on factors like baseline BMI and psychiatric comorbidities.
- **Clinical Note:** Effective even in complex cases (e.g., BED with bipolar disorder), suggesting promise for personalized treatments.

4. Safety and Tolerability

- **Side Effects:** Mostly mild, such as nausea, often transient.
- **Conclusion:** Generally safe for long-term use in BED patients.

5. Limitations

- **Short Follow-up Periods:** Most studies are short-term, limiting insights into long-term efficacy and safety.
- **Small Sample Sizes:** Several studies had small sample sizes, affecting the generalizability of results.
- **Limited Diversity:** Few studies examined the effects of GLP-1 receptor agonists across different demographic groups, potentially limiting applicability.

6. Clinical Implications and Future Directions

- **Integrated Treatment:** Combining GLP-1 receptor agonists with behavioral therapy may enhance outcomes.
- **Need for Research:** Larger, long-term studies needed to assess sustained effects and identify predictors of positive response.

Conclusions

- **Promising Treatment Option:** GLP-1 receptor agonists show potential as a novel approach to managing binge-eating disorder (BED), addressing both eating behaviors and associated metabolic challenges.
- **Well-Tolerated for Long-Term Use:** Mild side effects and a favorable safety profile suggest that GLP-1 receptor agonists are suitable for sustained use in BED treatment.
- **Clinical Relevance:** Incorporating GLP-1 receptor agonists into BED treatment could offer a dual benefit in reducing binge-eating episodes and supporting metabolic health, providing a comprehensive option for patients with BED.

