

PSYCHOLOGICAL AND QUALITY-OF-LIFE EFFECTS OF GLP-1 RECEPTOR AGONISTS

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Abstract

Glucagon-like peptide-1 receptor agonists (GLP-1RAs) and the dual GIP/GLP-1 receptor agonist tirzepatide have substantially advanced the pharmacological treatment of obesity and type 2 diabetes. Beyond their metabolic effects, increasing attention has been directed toward their psychological outcomes and impact on quality of life. The aim of this narrative review was to summarize current evidence regarding the psychological and quality-of-life effects of GLP-1 receptor agonist therapy.

This narrative review is based on a literature search covering human studies published between 2010 and 2026, including randomized controlled trials, cohort studies, and meta-analyses reporting patient-reported outcomes (PROs) or psychological variables. Randomized clinical trials consistently demonstrate that clinically significant weight loss is accompanied by improvements in both weight-specific and general health-related quality of life. Several studies also report reductions in food craving, "food noise," and maladaptive eating patterns. Current evidence does not indicate an increased risk of suicidality; however, patients with significant psychiatric comorbidities remain underrepresented in clinical trials. Findings related to eating disorders are promising but methodologically limited.

Overall, GLP-1 receptor agonist therapy appears to exert complex biopsychosocial effects, in which metabolic improvements, central nervous system modulation, and subjective quality-of-life changes are closely interconnected.

1 Introduction

Obesity and type 2 diabetes represent major public health challenges of the 21st century, associated not only with metabolic complications but also with significant psychosocial burden and reduced quality of life.

In recent years, glucagon-like peptide-1 receptor agonists (GLP-1RAs), as well as the dual GIP/GLP-1 receptor agonist tirzepatide, have brought substantial advances in the pharmacotherapy of weight management. Large randomized clinical trials have demonstrated that both semaglutide and tirzepatide induce clinically significant and sustained weight loss in overweight and obese adults [1] [2]. These findings have opened new perspectives in the pharmacological treatment of obesity and have also raised interest in the psychological consequences of such therapies.

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Analyses of patient-reported data from the STEP and SURMOUNT clinical trials suggest that improvements in physical functioning and quality of life associated with weight loss are clinically meaningful [3] [4]. Other studies report reductions in food craving, “food noise” (uncontrollable thoughts about food), and certain maladaptive eating patterns during GLP-1RA treatment [3] [4] [7].

However, the interpretation of the psychological effects of GLP-1RAs remains complex. GLP-1 receptor agonists may influence eating behavior through modulation of central reward pathways and food cue processing [7] [8] [9] [10]. The issue of psychiatric safety—particularly with regard to suicidality—has received increasing international attention in recent years. Post hoc analyses of the STEP trials indicate that semaglutide treatment did not increase the risk of depression or suicidal behavior compared to placebo [11], and large cohort studies have not demonstrated a clear increase in risk [12].

At the same time, existing findings are not entirely consistent, as studies differ substantially in their methodology, populations, and endpoints. Randomized trials often exclude patients with psychiatric comorbidities, while qualitative studies are typically based on limited sample sizes. Therefore, a critical review of the psychological and quality-of-life effects of GLP-1 receptor agonists is warranted.

The aim of the present study is to provide an overview of the psychological and quality-of-life aspects of modern weight loss therapies based on available clinical evidence.

2 Materials and Methods

2.1 Literature Review Methodology

This study is a narrative literature review. Relevant literature was identified through multiple databases (PubMed, Scopus, Web of Science, and Google Scholar), focusing primarily on publications from 2010 to 2026. The search strategy included combinations of keywords such as “GLP-1 receptor agonist,” semaglutide, liraglutide, tirzepatide, as well as “quality of life,” “patient-reported outcomes,” and terms related to psychological variables (e.g., depression, anxiety, suicidality, eating behavior, craving).

Included publications comprised human studies, with particular emphasis on randomized controlled trials, cohort studies, and meta-analyses that assessed patient-reported outcomes (PROs) or psychological variables. Study selection was not based on a predefined formal set of criteria but rather on expert judgment, focusing on publications considered relevant to the topic.

3 Results

3.1 Weight Loss and Quality of Life

Clinical trials of modern incretin-based weight loss therapies consistently indicate that substantial weight reduction is accompanied by improvements in quality of life. In the case of semaglutide, pooled analyses of the STEP trials demonstrated significant improvements compared to placebo on both the IWQOL-Lite and SF-36 questionnaires, particularly in physical functioning and self-esteem [4]. A similar pattern has been observed in the SURMOUNT trials of tirzepatide, where improvements in weight-related quality of life occurred in parallel with greater weight loss [2] [3]. Favorable changes in weight-related quality of life were also reported in the SCALE study evaluating liraglutide [13]. Overall, current evidence suggests that the impact of incretin-based therapies on quality of life is reflected not only in weight reduction but also in improvements in psychological well-being. Although these findings are consistent across large trials, it remains unclear to what extent improvements in quality of life are directly attributable to pharmacological effects versus being mediated by weight loss itself. Furthermore, variability in PRO instruments limits direct comparability across studies.

3.2 Changes in Eating Behavior

During semaglutide treatment, participants reported reductions in “food noise” and craving, and researchers have also described decreases in maladaptive eating patterns, such as emotional eating and loss-of-control eating [6] [14]. Additional studies have shown that GLP-1 receptor agonist

treatment may reduce externally triggered eating [5]. These findings suggest that pharmacological treatment exerts its effects not only by reducing hunger but also by influencing cognitive and emotional processes related to eating. Neurobiological models propose that GLP-1 receptor agonists may modulate food-related reward processing through effects on central reward pathways, particularly mesolimbic dopaminergic circuits [7] [9]. This mechanism may explain the observed reduction in food-related attention and craving. However, most available studies rely on self-reported measures or small samples, and causal mechanisms remain insufficiently established. Future research should aim to disentangle direct neurobiological effects from weight loss–related behavioral changes.

3.3 Psychological Outcomes and Psychiatric Safety

In recent years, several publications have addressed the psychiatric safety of GLP-1 receptor agonists. Post hoc analyses of the STEP 1, 2, 3, and 5 trials indicate that semaglutide use was not associated with an increased risk of depressive symptoms or suicidal ideation/behavior compared to placebo, with only a small, clinically non-significant reduction in depression scores observed [11].

A 2024 cohort study based on Scandinavian registry data similarly found no increased risk of suicide mortality following initiation of GLP-1 receptor agonist therapy [12]. Comparable results were reported in an active-comparator cohort study in patients with type 2 diabetes, which compared GLP-1 receptor agonists with DPP-4 inhibitors and SGLT-2 inhibitors and found no statistically significant excess risk of suicidality (including suicidal ideation, self-harm, or suicide) in the GLP-1RA group [15].

Regulatory evaluations have reached similar conclusions: according to a 2026 FDA communication, available data do not provide clear evidence of an increased suicidality risk associated with GLP-1 receptor agonists, and removal of previous warnings has been proposed for certain products [16]. At the same time, some review articles highlight that, alongside improvements in physical health, certain indicators of mental health and subjective well-being may also improve during treatment, although the causal mechanisms remain incompletely understood [8].

Overall, current evidence does not suggest an increased risk of suicidality associated with GLP-1 receptor agonist use. However, careful monitoring of psychiatric symptoms remains warranted in clinical practice, particularly among patients with psychiatric comorbidities.

3.4 Side Effects, Adherence, and Quality of Life

The use of GLP-1 receptor agonists is most commonly associated with gastrointestinal side effects, such as nausea, vomiting, diarrhea, and abdominal discomfort. Based on clinical trials and pooled analyses from the STEP program, these symptoms typically occur during the initial phase of treatment or during dose escalation and are generally transient and of mild-to-moderate severity [17]. A similar tolerability profile has been observed in the clinical development program of tirzepatide [2].

Although these side effects are usually not severe, their clinical relevance is particularly important in terms of treatment adherence. Early treatment-related discomfort may lead to discontinuation or dose reduction, potentially affecting long-term outcomes [1] [18] [19]. However, mediation analyses suggest that weight loss is not primarily driven by gastrointestinal (GI) side effects but rather by the pharmacological action of the drug; GI symptoms contribute only minimally to explaining weight change [17].

The relationship between adherence and quality of life is also well established. Patient-reported outcomes (PROs) from the STEP program indicate improvements in physical functioning and weight-specific quality of life among patients receiving sustained treatment [4]. Similar findings have been reported in tirzepatide studies, where longer-term treatment was associated with significant improvements in both general and physical quality-of-life measures [20]. Real-world data further support this relationship: treatment persistence is associated with more favorable weight and metabolic outcomes, whereas early discontinuation leads to more modest results [21]. These findings suggest that adherence plays a mediating role between pharmacological effects and improvements in quality of life.

Thus, the success of GLP-1 receptor agonist therapy is not solely dependent on biological mechanisms. Proactive management of side effects, gradual dose titration, and patient education are essential for maintaining adherence, which ultimately determines clinical and quality-of-life outcomes.

3.5 GLP-1 Receptor Agonists and Eating Disorders

According to current systematic studies, certain GLP-1 receptor agonists may favorably influence the frequency and severity of binge eating episodes; however, the available evidence is based on small sample sizes, and large-scale, placebo-controlled trials are lacking. Existing clinical data suggest symptom reduction primarily in binge eating disorder and bulimia nervosa, although studies are heterogeneous and methodologically limited [22].

Neurobiological research indicates that GLP-1 receptors are not only involved in hypothalamic appetite regulation but are also expressed in key regions of the reward system—such as the ventral tegmental area and nucleus accumbens—where they may influence behavioral and neurochemical responses to rewarding stimuli [9] [23]. Through modulation of mesolimbic dopaminergic pathways, GLP-1 receptor agonists may reduce the rewarding value of food and the intensity of craving, providing a theoretical explanation for the reduction in binge eating episodes [24].

In addition to the reward system, the regulatory role of the prefrontal cortex may also be relevant. Neuropsychological models of binge eating disorders emphasize reduced impulse control and impaired “top-down” executive control. Experimental and neuroimaging data suggest that GLP-1 receptor agonists may not only reduce limbic reactivity to food cues but also influence frontal control regions, potentially contributing to improved behavioral self-regulation [5] [25]. The role of the GLP-1 system is also being investigated in other reward-related behaviors, such as alcohol consumption and substance use [8] [10]. These parallels with addiction suggest that the effects of GLP-1 receptor agonists may extend beyond eating behavior and involve broader reward-motivation mechanisms.

At the same time, careful consideration of risks is essential in clinical application. In populations with eating disorders—particularly restrictive types such as anorexia nervosa—weight loss pharmacotherapy may have potentially adverse effects, including the exacerbation of restrictive behaviors or body image disturbances [26]. Randomized weight loss trials typically exclude patients with severe psychiatric comorbidities, limiting the generalizability of findings to these populations.

Based on current evidence, GLP-1 receptor agonists may have beneficial effects on binge eating-related disorders; however, most data are derived from preclinical, small-sample, or observational studies. The proposed neurobiological mechanisms—particularly modulation of reward systems—provide a plausible explanation for observed effects such as reductions in binge episodes, “food noise,” and craving. Nevertheless, large, well-designed, placebo-controlled trials are needed to establish their therapeutic applicability, as the current evidence base remains limited by small sample sizes, heterogeneity in study design, and a lack of randomized controlled trials. Therefore, conclusions should be considered preliminary.

4 Discussion

The aim of this narrative review was to summarize the psychological and quality-of-life effects of GLP-1 receptor agonist therapies based on available clinical and translational evidence. Overall, current findings suggest that the effects of modern incretin-based treatments extend beyond improvements in metabolic parameters and are associated with clinically meaningful changes in quality of life, as well as modifications in eating behavior.

Large randomized clinical trials (STEP, SURMOUNT, SCALE) have consistently demonstrated that substantial weight loss is accompanied by improvements in both weight-specific and general health-related quality of life. Patient-reported outcomes (PROs) have shown particularly favorable changes in physical functioning, self-esteem, and daily activity. These findings suggest that pharmacological treatment contributes not only through reductions in body weight but also through improvements in subjective well-being and psychosocial functioning, ultimately enhancing patients’ quality of life.

Findings related to eating behavior deserve particular attention. Qualitative and quantitative studies reporting reductions in craving, “food noise,” and maladaptive eating patterns suggest that GLP-1 receptor agonists may influence cognitive and emotional processes related to eating. Modulation of the reward system, particularly mesolimbic dopaminergic pathways, provides a biologically plausible explanation for these effects. However, it remains unclear whether psychological improvements are primarily a consequence of weight loss or are partly driven by weight-independent central nervous system mechanisms.

Data regarding psychiatric safety are reassuring: post hoc analyses of randomized trials and large cohort studies have not demonstrated an increased risk of suicidality. Nevertheless, it is important to emphasize that clinical trials have typically excluded patients with severe psychiatric comorbidities, limiting the generalizability of these findings. This limitation is particularly relevant in real-world clinical settings, where psychiatric comorbidities are common among patients with obesity. Therefore, monitoring of individual psychological status remains warranted in clinical practice.

Adherence is another key factor. Gastrointestinal side effects are generally transient and of mild-to-moderate severity, but they may affect treatment persistence, particularly during the early phase of therapy. Adherence may play a mediating role between pharmacological effects and improvements in quality of life, highlighting that successful treatment requires a multidimensional approach, including dose titration, patient education, and psychological support.

Findings related to eating disorders are promising, particularly in binge eating disorder and bulimia nervosa; however, the available evidence remains limited and heterogeneous. Based on neurobiological models, the GLP-1 system may influence binge eating through reward and motivational mechanisms, but large, well-controlled studies are needed to establish therapeutic applicability. Particular caution is required when considering use in restrictive eating disorders, where weight loss pharmacotherapy may have adverse psychological consequences.

Overall, current evidence suggests that GLP-1 receptor agonist therapy operates through a complex biopsychosocial mechanism, in which metabolic improvements, central nervous system modulation, and subjective changes in quality of life are closely interconnected. Future studies should also explore potential differences in psychological outcomes between specific agents, such as semaglutide and tirzepatide.

5 Limitations

The interpretation of the available evidence is limited by several factors. Randomized clinical trials have primarily focused on metabolic and weight-related endpoints, while psychological outcomes have often been secondary or exploratory in nature.

A substantial proportion of studies have excluded patients with severe psychiatric comorbidities, limiting the representativeness of real-world clinical populations. Qualitative studies are typically based on small sample sizes, which restricts the generalizability of their findings. The causal relationship between improvements in quality of life and weight loss is not always clearly established. In addition, data on long-term (>3–5 years) psychological outcomes remain limited.

Due to the narrative nature of this review, study selection was not based on a formalized, predefined set of criteria and no formal quality assessment (e.g., risk-of-bias tools) was conducted. Accordingly, this study does not aim to provide a fully systematic synthesis of the available evidence, and the strength of the evidence should be interpreted with caution.

6 Future Research Directions

Future research should focus on several key areas: Designing randomized trials with psychological and quality-of-life outcomes as primary endpoints. Including populations with psychiatric comorbidities to enhance external validity. Conducting longitudinal, long-term follow-up studies to assess psychological effects. Utilizing neuroimaging and biomarker-based approaches to better characterize central nervous system mechanisms. Performing eating disorder-specific, placebo-controlled clinical trials to clarify therapeutic applicability. Investigating the role of adherence and psychological support within complex intervention models.

A deeper understanding of the psychological effects of GLP-1 receptor agonists may contribute to the development of a more personalized and integrated model of obesity treatment that simultaneously addresses metabolic, psychological, and quality-of-life dimensions. Future reviews may benefit from a more systematic methodology to enhance transparency and reproducibility.

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