

Comparative Efficacy and Safety of Tirzepatide versus Semaglutide for Obesity Management

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Abstract

Background: Incretin-based therapies have emerged as effective strategies for obesity and type 2 DM(T2DM) management. Semaglutide, a glucagon-like peptide-1 receptor agonist (GLP-1RA), and tirzepatide, a dual gastric inhibitory polypeptide (GIP) and GLP-1R agonist, are among the most promising agents. Comparative real-world data on their efficacy, lifestyle interactions, and safety profiles remain limited.

Objective: This study aimed to compare the efficacy and safety of tirzepatide with those of semaglutide in adults with obesity, and to assess the impact of lifestyle factors on weight reduction outcomes.

Methods: In this retrospective, comparative, observational study, 100 participants (aged 18 years or older) with obesity received either tirzepatide (n = 58) or semaglutide (n = 42). Baseline demographics, comorbidities, lifestyle factors, and concomitant medications were recorded, and anthropometric outcomes, including BMI and weight change, were assessed. Safety was evaluated through reported adverse events, and the impact of diet, exercise, and antidiabetic medication on weight loss was analyzed.

Results: Both treatment groups achieved significant weight reduction, with tirzepatide resulting in greater mean weight loss than semaglutide (8.5 ± 4.1 vs. 6.9 ± 3.4 kg; $p = 0.033$). Lifestyle modification further enhanced outcomes, with participants practicing both diet and exercise showing the largest improvements ($p < 0.001$). Adverse events were predominantly gastrointestinal, with higher rates of nausea, vomiting, and diarrhea in the tirzepatide group; serious events were rare. Baseline characteristics were generally comparable, though BMI was higher in the tirzepatide group (36.6 ± 4.8 vs. 32.3 ± 3.6 kg/m²; $p < 0.001$).

Conclusion: Tirzepatide and semaglutide are both effective for weight reduction in obesity, with tirzepatide providing greater efficacy but increased gastrointestinal side effects. The integration of lifestyle interventions with pharmacotherapy further optimizes treatment outcomes, underscoring the importance of combining behavioral and pharmacological strategies. [*J Assoc Clin Endocrinol Diabetol Bangladesh*, 2025;4(Suppl 1): S70]

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