

Characterization of Safety and Efficacy of GLP-1 Receptor Agonists in Weight Reduction

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ABSTRACT

The outstanding impact of glucagon-like peptide-1 (GLP-1) receptor agonists on the management of obesity over a short period of time has become commonly applied in clinical settings. However, safety and efficacy data from multicenter studies are lacking. We sought to characterize the comparative safety and efficacy of semaglutide (SGT), liraglutide (LGT), and tirzepatide (TZT) for weight reduction over a short-term treatment duration. This prospective comparative study enrolled 129 participants with obesity, subdivided equally into three groups (n=43 each) treated with standard doses of SGT, LGT, and TZT over a 12-week period. Body mass index (BMI) decreased in all groups; however, a significant reduction in BMI was only associated with TZT (from 42 ± 7.3 to 35.3 ± 3.8 kg/m²; $P=0.0001$), whereas reductions were non-significant with SGT ($P=0.07$) and LGT ($P=0.13$). Moreover, TZT was associated with the lowest rate of adverse effects (headache: 17%; GIT symptoms: 16%) compared to SGT (42%; 37%) and LGT (35%; 42%). TZT has shown better positive outcomes compared to SGT and LGT. TZT induced higher weight reduction, less negative effect, and greater positive outcomes compared to SGT and LGT within the first 12 weeks of treatment.

Keywords: GLP-1 receptor agonists, tirzepatide, semaglutide, liraglutide, obesity, Weight reduction efficacy.

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