



**What is the prevalence of  
GLP-1 receptor agonist injections misuse  
and how does it compare to FDA medical  
recommendations?**

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**Abstract:** Glucagon-like peptide-1 receptor agonists injections are a new worldwide trend for rapid weight loss. The medications were primarily designed to treat type 2 diabetes mellitus, but the FDA approved the injections for chronic weight management in adults who fit a specific criterion. Due to growing popularity, injections are increasingly accessible and available, allowing for “off-label” use. There is still insufficient evidence to know whether these drugs might be beneficial or dangerous for people who fall outside of the US FDA’s criteria. The misuse of these injections is on the rise, emphasizing the need for a thorough investigation into the prevalence of misuse and its consequential impacts on individuals.

**Key terms:** Type 2 diabetes mellitus, glucagon-like peptide-1 receptor agonist, subcutaneous, weight loss, obesity, prescription, Body mass index, FDA medical recommendations.

**Introduction:** Over 1 billion people struggle with obesity worldwide (Laurence). Furthermore, there is an emerging worldwide trend in the use of GLP-1 (glucagon-like peptide-1) receptor agonist injections for quick weight loss. The subcutaneous injections of GLP-1 RAs were primarily designed for the incretin-based treatment of T2DM. They work by mimicking the action of a hormone called GLP-1 in our body. The hormone maintains glucose homeostasis by stimulating insulin secretion, inhibiting glucagon release, slowing down digestion, and regulating appetite (Meier). The first GLP-1 RA approved by the US FDA was exenatide in 2005 for the treatment of T2DM. (Stat Pearls). GLP-1 RAs are now used for chronic weight management in non-diabetic patients, reflecting a notable shift over time. Nowadays, Ozempic (semaglutide) is currently portrayed as a ‘trend’. On June 4th, 2021, the US FDA approved Wegovy (semaglutide) injection at a dosage of 2.4mg once weekly, for chronic weight management in adults with obesity or overweight that face at least one weight-related condition such as high blood pressure, T2DM, or high cholesterol, for use in addition to a reduced calorie diet and increased physical activity. (Commissioner). To obtain a prescription, patients must meet specific criteria, including a body mass index (BMI) of 27 kg/m<sup>2</sup> or higher if they have a weight-related ailment or a BMI of 30 kg/m<sup>2</sup> or higher. (Watson). Still, people who only want to shed some pounds are finding loopholes. With increasing traction through social media, off-label use is getting out of control. On TikTok, the hashtag #Ozempic has been viewed over 273 million times (Blum). The growing popularity, ease of access, and availability of GLP-1 RAs are leading to the misuse of the injections which can lead to harsh adverse side effects on cardiovascular health, gastric emptying, central nervous system function, and kidney health (Ryan and Acosta). The subcutaneous injections, priced at \$1,200 per month, are marketed through telemedicine, raising concerns about unauthorized practices by providers (Jones). This research proposal aims to investigate the prevalence of GLP-1 RAs injection misuse and how it compares to FDA medical recommendations and guidelines, focusing on Ozempic (semaglutide) and Saxenda (liraglutide). The research will explore the following sub-questions:

1. How are people misusing GLP-1 receptor agonist injections?
2. What are the associated impacts of using GLP-1 receptor agonist injections for reasons that go against the FDA medical recommendations and guidelines?

**Literature Review:** The FDA approved Ozempic for chronic weight management in adults with at least one weight-related condition, alongside a reduced calorie diet and physical activity (Commissioner). In addition, consumers must fit a specific criterion to qualify for a prescription. In addition to a BMI greater than 27 kg/m<sup>2</sup>, some who have certain conditions must stay clear of the trend. For example, people with a history of gallstones, IBS, or gastro-oesophageal reflux disease or women of child-bearing age must consult a specialist before given a prescription. Whilst it is unsuitable for people with type 1 diabetes, children under 10 with T2DM, pregnant women, and people with a history of or risk factors of pancreatitis or medullary thyroid cancer to consume the injection (Milne). Moreover, A clinical trial proved

that the misuse of Saxenda (liraglutide) which is taken daily, could lead to thyroid C-cell tumors, acute pancreatitis, acute gallbladder disease, hypoglycemia, heart rate increase, hypersensitivity, and gastrointestinal AEs (Chowdhury and Golden). Taking GLP-1 RAs has adverse side effects. Meanwhile, the misuse of the medication is a product of a lack of awareness and the ease and availability of finding off-label providers. Doctors say there is not enough evidence to know whether these drugs might be beneficial or dangerous for people who fall outside the FDA's criteria. Especially since the drug has not been systematically tested in people with lower body weights, it is possible for patients outside the group of people the drug is intended for to experience more side effects. Without more research, it's unclear just how damaging those side effects can be (Blum). Existing research and literature confirm that there is a need to further investigate whether off-label use of these medications is dangerous. Also, studies prove that the misuse of these injections is on the rise, emphasizing the need for a thorough investigation into the prevalence of misuse and its consequential impacts on individuals.

**Methodology:** This research proposal focuses on data collection from Amman, Jordan, serving as a representative sample space.

**1. How are people misusing GLP-1 receptor agonist injections?**

This question will be addressed by studying the availability of the GLP-1 RA injections in Amman. This will be done by identifying healthcare facilities where injections are commonly prescribed and dispensed to better understand the procedure and requirements of giving a patient a prescription. While interviewing doctors and specialists will lead to the collection of primary data as it is diverse viewpoints from subject matter experts regarding the matter. Thirdly, engaging with pharmacies will allow for data collection from local and international suppliers, providing insights into market trends, availability, and utilization of Ozempic and Saxenda. Lastly, the central method to collect data is by gathering information from patients through conducting regional surveys. The survey will collect information from consumers of Ozempic or Saxenda about the individual's overall health, source of accessing the medication, the reason they take the medication, BMI, initial glucose levels, dosage consumed, family history, whether they have a prescription, if they have any weight-related conditions and the side effects they faced from the medication. After accumulating this information from a large pool of consumers, researchers can compare each case to the FDA's medical recommendations and guidelines. This comprehensive data collection approach will help in understanding the broader context of Ozempic and Saxenda availability and usage patterns.

**2. What are the associated impacts of using GLP-1 receptor agonist injections for reasons that go against the FDA medical recommendations and guidelines?**

This study will comprehensively analyze over 15 cases of patients using Ozempic or Saxenda for chronic weight management. Patients meeting FDA criteria will be selected for comparative analysis, exploring the differential implications experienced by distinct patient populations. The study will observe weight loss, side effects, glucose levels, and blood work over 6 months. Additionally, a regional survey will collect data on the implications and effects faced by non-FDA criteria patients. Lastly, medical record analysis in collaboration with healthcare providers will assess complications from medication misuse. These methodologies aim to gather reliable data on the impacts of using GLP-1 receptor agonist injections against FDA guidelines.

**Impact:** This research on GLP-1 receptor agonist injection misuse and its comparison to FDA recommendations will greatly benefit healthcare interventions. It will enhance patient safety, enable informed decision-making by healthcare providers, and promote targeted interventions for proper medication usage. The aim of this research proposal is to raise awareness and improve healthcare practices, ensuring the optimal and safe utilization of these medications.

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