ANALYSIS PAPER

Ozempic and Wegovy: Are These Popular Diabetes and Weight Loss Drugs Associated With Increases in Serious Side Effects?

By Emma Goldberg, Data Analyst
egoldberg@hqinstitute.org

January, 2025

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KEY TAKEAWAYS

- Prescriptions for semaglutide, marketed under the names Ozempic and Wegovy, surged almost 3,000% in the U.S. from 2018 to 2022.
- Encounters of gallbladder inflammation in California hospitals surged by 492% during the study period, potentially linked to the slowed digestion caused by long-term semaglutide use.
- Hospital encounters in California related to acute kidney injuries rose by 18% and cases of low blood sugar (hypoglycemia) increased by 27%, suggesting these may be emerging areas of concern for semaglutide users.

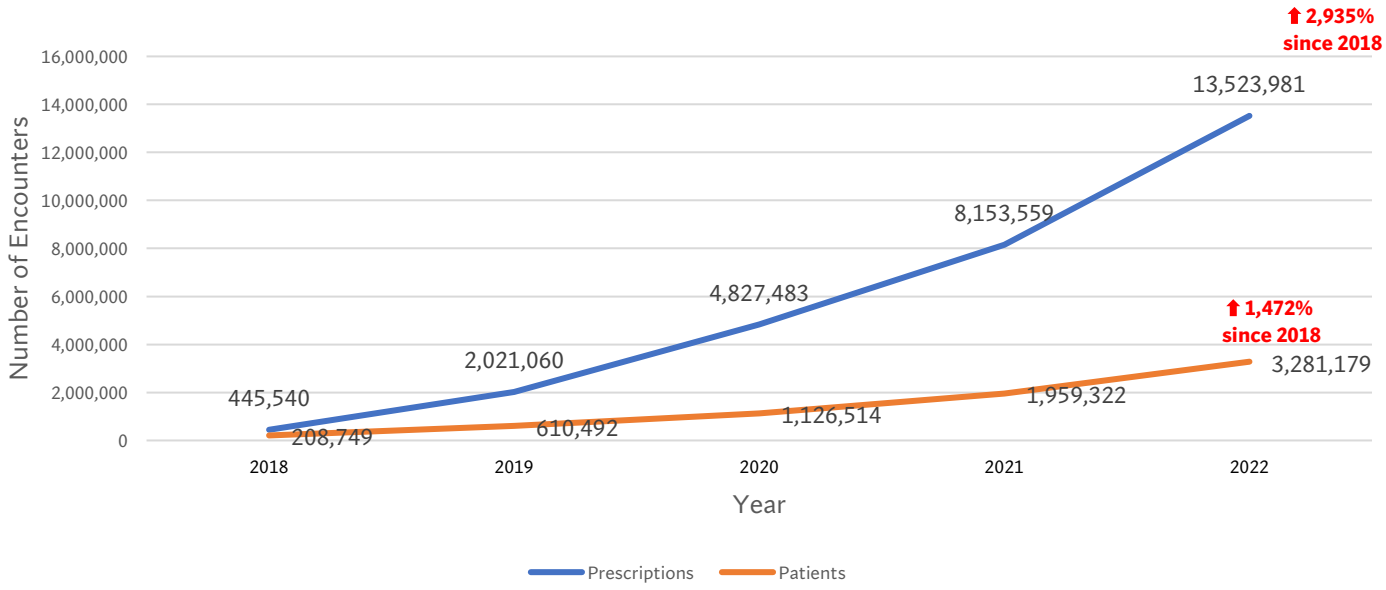
INTRODUCTION & BACKGROUND

Two medications originally developed for managing Type 2 diabetes may hold promise for weight loss but come with significant risk. Patients with Type 2 diabetes — which is often associated with aging, obesity, and a family history of diabetes — become resistant to insulin and cannot maintain normal blood sugar levels. Ozempic and Wegovy, which rely on active ingredient semaglutide, mimic the *GLP-1* hormone to stimulate insulin secretion, suppress glucagon release, slow gastric emptying, and reduce appetite.[1] These drugs are lifesaving for the approximately 3.2 million Californians living with Type 2 diabetes. This condition is one of the most common comorbidities associated with hospitalizations, accounting for roughly 2.3 million hospital encounters each year.

In addition to their efficacy in treating Type 2 diabetes, Ozempic and Wegovy have shown potential as weight loss aids, and national use has skyrocketed. As shown in Figure 1 below, total prescriptions for these two drugs increased almost 3,000% from 2018 to 2022; the number of individuals receiving the drugs increased nearly 1500% over the

same period. Today, more than 3 million Americans are using either Ozempic or Wegovy.[2]

Figure 1. Total Semaglutide Prescriptions and Patients, US 2018-2022[2]



[1] https://www.ncbi.nlm.nih.gov/books/NBK603723/

[2] Kane SP. Semaglutide, ClinCalc DrugStats Database, Version 2024.08. ClinCalc: https://clincalc.com/DrugStats/Drugs/Semaglutide. Updated August 7, 2024. Accessed December 9, 2024.

Although semaglutide may seem like a miracle medication for those with Type 2 diabetes or obesity, long-term use may carry higher risks of side effects including low blood sugar levels (hypoglycemia), acute kidney injuries (renal failure), gallbladder inflammation (cholecystitis), and acute pancreatitis.[3]

METHODOLOGY

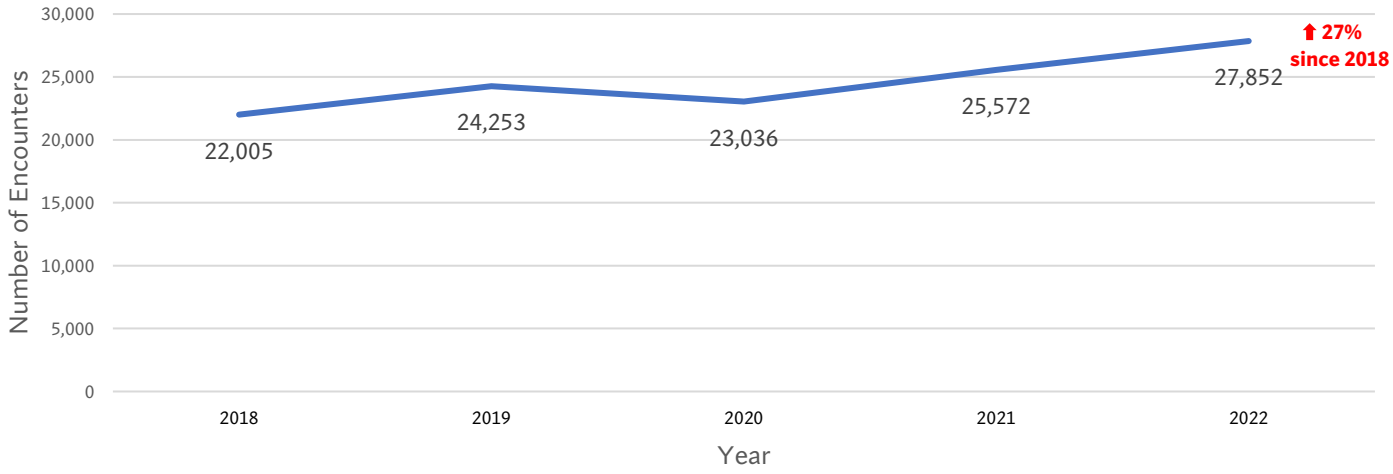
HQI investigated the prevalence of various side effects (i.e., adverse drug reactions) potentially associated with semaglutide use by plotting the trends of International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10) codes on hospital encounters records from 2018 to 2022 using Department of Health Care Access and Information (HCAI) Limited Data Set Inpatient (PDD), Emergency Department (EDD), and Ambulatory Surgery (AS) files.[4]

RESULTS

Low Blood Sugar Levels (Hypoglycemia)

One side effect of Ozempic and Wegovy may be hypoglycemia, or lowered blood sugar. Semaglutides can decrease glucagon secretion and promote a feeling of satiety, both of which can lead to lower blood sugar levels. This becomes especially problematic when used in combination with other diabetes medications.[5] As shown in Figure 2, the prevalence of unspecified hypoglycemia increased 27% between 2018 and 2022 (22,005 in 2018 vs. 27,852 in 2022).

Figure 2. Prevalence of Unspecified Hypoglycemia (ICD-10 Code E16.2), CA Hospitals 2018-2022

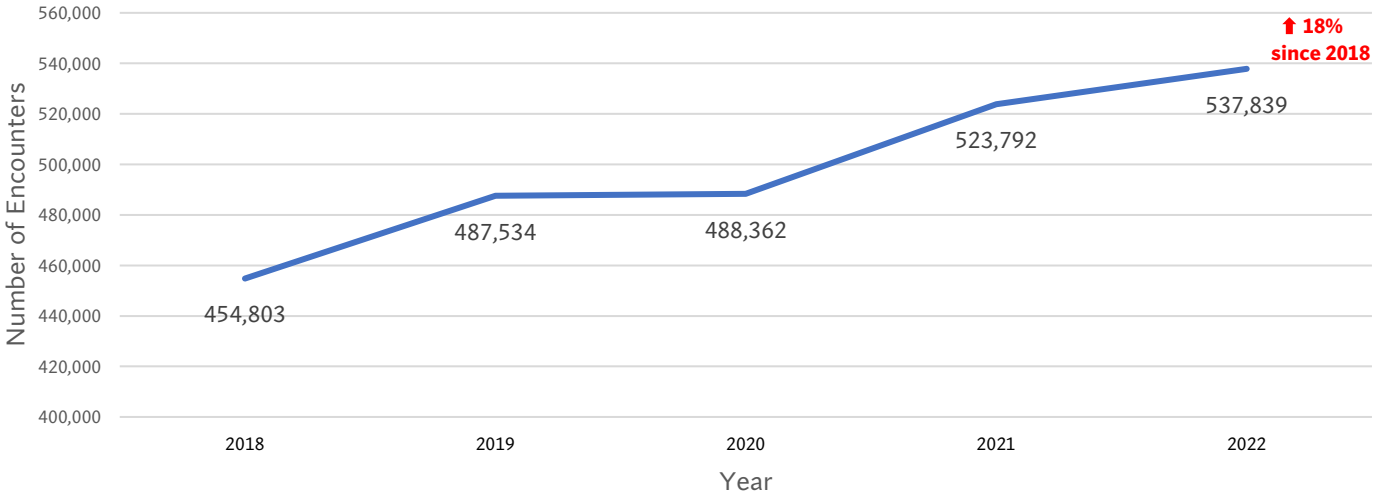


Acute Kidney Injuries (Renal Failure)

Kidney failure may be another side effect associated with long-term use of Ozempic and Wegovy, due to increased risk of vomiting, nausea, and dehydration in those using these prescriptions.[5] As shown in Figure 5 on page 4, unspecified acute kidney failure encounters increased 18% from 2018 to 2022 (454,803 in 2018 vs. 537,839 in 2022).

[3] https://www.ncbi.nlm.nih.gov/books/NBK603723/
[4] https://hcai.ca.gov/data/request-data/limited-data-request-information/
[5] https://www.ncbi.nlm.nih.gov/books/NBK603723/

Figure 3. Prevalence of Unspecified Acute Kidney Failure (ICD-10 Code N17.9), CA Hospitals 2018-2022

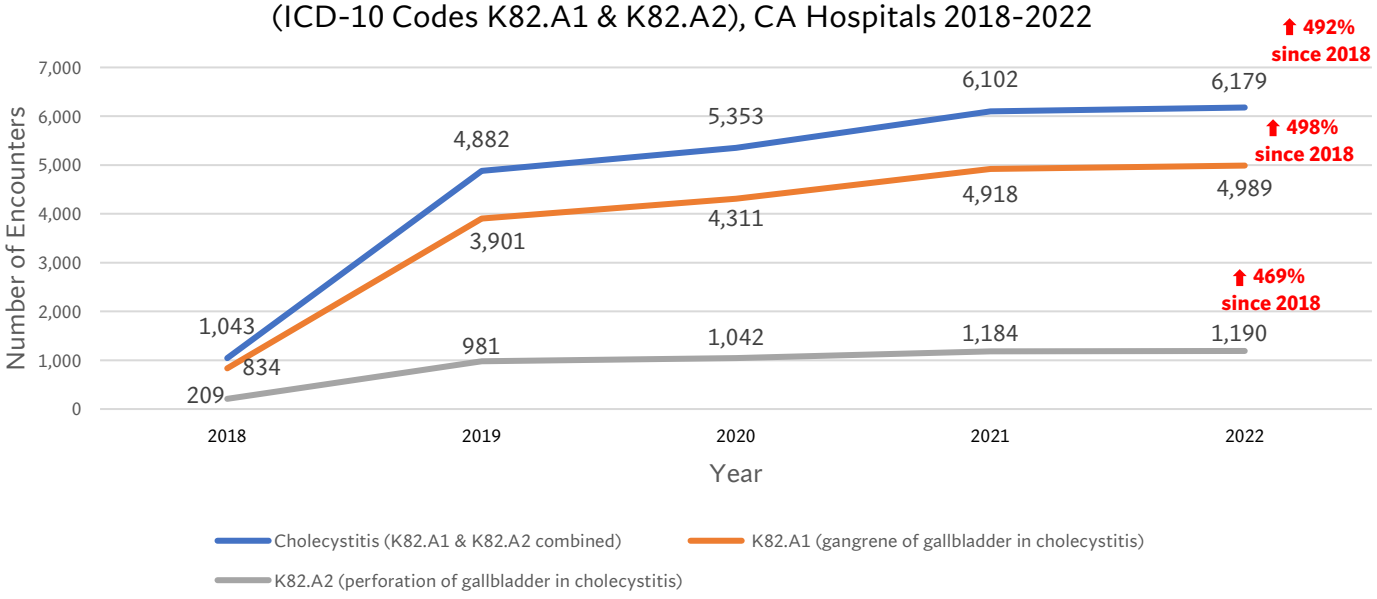


Gallbladder Inflammation (Cholecystitis)

Perhaps one of the deadliest side effects that may occur following long-term use of Ozempic and Wegovy is damage to the gallbladder, such as gangrene or perforation. These medications slow the digestive process and cause the gallbladder to empty less frequently, which can lead to more concentrated bile that results in gallstones or

gallbladder inflammation (known as cholecystitis).[6] As shown in Figure 4, between 2018 and 2022, cholecystitis encounters surged 492% (1,043 in 2018 vs. 6,179 in 2022). Hospital encounters involving gangrene of the gallbladder and gallbladder perforation increased by 498% and 469%, respectively, over the same period.

Figure 4. Prevalence of Gallbladder Inflammation (ICD-10 Codes K82.A1 & K82.A2), CA Hospitals 2018-2022

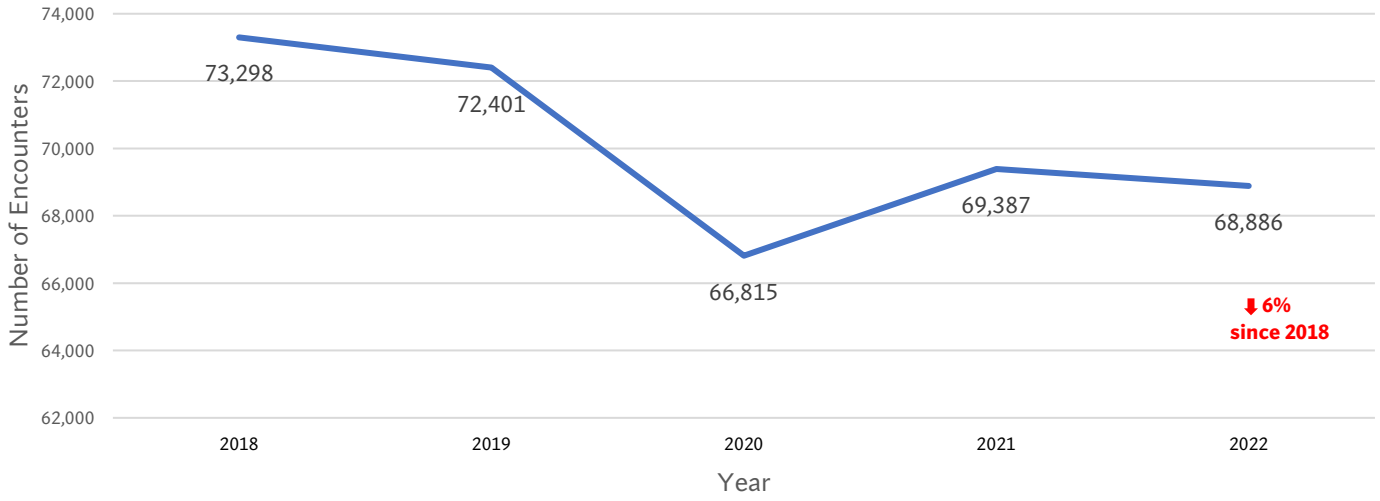


[6] https://www.ncbi.nlm.nih.gov/books/NBK603723/

Acute Pancreatitis

Another side effect of long-term Ozempic and Wegovy use may be damage to the pancreas. Semaglutide mimics a naturally occurring hormone that stimulates insulin production. When insulin production is increased, hyperstimulation of pancreatic cells can occur, resulting in a condition known as pancreatitis.[7] Figure 5 shows the prevalence of acute pancreatitis among California hospital encounters from 2018 to 2022. Notably, acute pancreatitis decreased 6% from 2018 (73,298) to 2022 (68,886).

Figure 3. Prevalence of Acute Pancreatitis (ICD-10 Code K85), CA Hospitals 2018-2022



DISCUSSION & CONCLUSION

While Ozempic and Wegovy may be highly effective in managing Type 2 diabetes and weight loss, they come with rare, but severe, risks. While the correlation between increased prevalence of these drugs and increased incidence of hypoglycemia, renal failure, and cholecystitis is far from conclusive, it demands further examination.

Ultimately, the medication must be administered carefully, with thorough consideration — based on a patient's detailed medical history — of whether the risks outweigh the benefits.

Questions or comments about this article should be directed to Emma Goldberg, data analyst, at egoldberg@hqinstitute.org.

ABOUT US

The Hospital Quality Institute (HQI) is dedicated to advancing patient safety and quality of care for all Californians. Through strategic partnerships and innovative programs, HQI supports hospitals in achieving excellence by providing data analytics, educational resources, and statewide initiatives focused on performance improvement. HQI oversees and coordinates the Collaborative Health Care Patient Safety Organization (CHPSO).

[7] https://www.ncbi.nlm.nih.gov/books/NBK603723/