

# Optimizing GLP-1RAs: A Smarter Approach to Sustainable Weight Loss

Impact of Nourish GLP-1 Programs on Clinical Outcomes and Costs



# Introduction

The obesity epidemic is surging in the United States, with over 40% of adults today classified as obese and projections by 2050 exceeding 60% of the adult population [1,2]. The rise in obesity is contributing to a rise in cardiovascular disease, diabetes, hypertension and other obesity-related chronic conditions. The obesity epidemic is placing an unprecedented strain on our healthcare system. Today, obesity-related healthcare costs exceed \$170 billion annually - with individuals with obesity incurring medical costs that are on average \$1,861 higher than individuals with a healthy weight [3]. Without effective interventions, these costs are expected to surpass \$1 trillion per year by 2050 [4].

Amid this crisis, GLP-1 receptor agonists (GLP-1s) have emerged as a groundbreaking treatment for obesity and related chronic conditions [5]. Originally developed for treatment of type 2 diabetes in 2004, and later approved for weight loss in 2014 [6], GLP-1s have demonstrated clinically meaningful reductions in hemoglobin A1c as well as unprecedented weight loss, with patients losing up to 20% of their body weight [7]. Their rapid adoption has led to a surge in demand, with 6% of Americans currently on GLP-1s and millions more considering GLP-1s as part of their weight-loss strategy [8].

Despite their potential, GLP-1s have proven unsuccessful in independently tackling the obesity problem in the US. Current challenges facing the GLP-1 landscape include access, cost, tolerability and related impact on adherence, and sustainability of results post-discontinuation. Most importantly from a clinical and financial perspective, many patients struggle to maintain long-term adherence, which results in reversal of health benefits including rebound weight gain and worsening risk factor profiles. These limitations highlight the need for a more comprehensive approach that combines GLPs with structured nutrition and behavioral support to drive sustainable results.



Nourish, the largest provider of nutrition therapy in the country, has successfully supported patients on their weight loss journey for over 3 years. Recently, Nourish launched GLP-1 pathway programs designed to support patients who currently take or recently discontinued GLP-1s. This paper explores how Nourish's nutrition therapy can effectively complement GLP-1s to deliver the greatest clinical and financial impact for patients, health systems and payers.

## The Limitations of a Medication-Only Approach

GLP-1s have revolutionized obesity treatment, offering significantly greater weight loss and clinically meaningful benefits for obesity related chronic disease compared to other anti-obesity medications. Clinical trials have shown that patients taking GLP-1s such as semaglutide (Wegovy or Ozempic) and tirzepatide (Mounjaro or Zepbound) can achieve weight loss exceeding 15–20%, in addition to improved

outcomes for patients with atherosclerotic cardiovascular disease, heart failure, chronic kidney disease and obstructive sleep apnea. [7,9,10].

While these medications have proven to be highly effective in clinical trials, their adoption has been limited by several challenges in the real world, including:



### Lack of Adherence

Despite GLP-1's impressive clinical outcomes, adherence remains a significant issue that hinders patient's ability to achieve long term clinical benefits. A large, observational analysis including obese patients without diabetes found only 32% continued their GLP-1 after one year, with even fewer (27%) adhering to prescribed regimens [11]. In a study conducted by Blue Cross Blue Shield, more than 30% of patients discontinued within the first month of use, and only 42% continued the medication for 12 weeks or longer [12]. Studies like these demonstrate that the majority of patients are discontinuing the medication before they are able to reach the optimal weight loss and clinical benefits.

Along with cost, access, and efficacy, a key driver of poor adherence and short-term use is GLP-1-related side effects. The majority of patients taking GLP-1s (70%) report side effects, most commonly gastrointestinal side effects, including nausea, vomiting, or diarrhea [13]. Patients who reported moderate or severe gastrointestinal side effects were more likely to discontinue the drug (for patients with type 2 diabetes: HR, 1.38 [95% CI, 1.31-1.45]); for patients without type 2 diabetes: HR, 1.19 [95% CI, 1.12-1.27])) [13].



### Risk of Rebound Weight Gain Post-Discontinuation

Another limitation of GLP-1s is the likelihood of rebound weight gain after patients discontinue treatment. GLP-1s promote weight loss by mimicking the incretin hormone GLP-1, leading to reduced appetite and delayed gastric emptying, which together decrease food intake and ultimately results in weight loss [14]. These benefits, however, only persist while patients are actively taking GLP-1s, therefore, when therapy is discontinued, patients often regain their appetite and experience rebound weight gain [15]. In fact, in clinical trials (STEP-1 extension, STEP-4), two-thirds of the weight loss was regained after discontinuing semaglutide [16,17]. With increased weight gain, individuals also noted worsening cardiometabolic parameters such as glucose levels, blood pressure and cholesterol levels.



### High Costs

Since the introduction and approval of newer GLP-1 medications (such as semaglutide and tirzepatide), drug costs have exceeded \$13,000 per patient per year [18]. While more affordable options have recently come to market (i.e. LillyDirect offering Zepbound for \$399-\$699 per month), these medications are still cost prohibitive for many Americans, which is meaningfully impacting access to these drugs for those patients most in need. Separate from the patient level costs, the high rates of discontinuation resulting in rebound weight gain and loss of health benefits are posing significant strain on the healthcare system, including insurers and employers. A study by Kaiser Family Foundation found that total gross Medicare spending on Ozempic, Rybelsus, and Mounjaro reached a total \$5.7B in 2022 [19].

## SECTION 3

# The Promise of Nutrition Therapy in Enhancing GLP-1 Effectiveness

The limitations noted above highlight a critical reality: despite the exorbitant cost to our healthcare system, GLP-1s cannot independently solve the obesity problem at scale.

However, evidence and expert consensus indicate that coupling GLP-1 therapy with personalized nutrition and behavioral support can help patients address several challenges that can in turn maximize the efficacy of the treatment. Some of these include:



### Improved Tolerability

Nutrition therapy can provide patients on GLP-1s with individualized counseling on specific dietary recommendations to increase tolerability. These recommendations include prioritizing smaller portions, adequate hydration, and increased dietary fiber - which when paired with proper drug titration, has been shown to reduce symptom severity and improve adherence [20].



### Maximize Long-Term Health Benefits

Nutrition therapy helps patients initiating or discontinuing GLP-1s build strong nutrition, lifestyle and behavior practices that are critical to long-term weight management. This support can therefore optimize long-term effectiveness of the treatment on weight management and weight related co-morbidities [21].

## Introduction to Nourish GLP-1 Pathways

Nourish, the largest provider of medical nutrition therapy (MNT) in the country, has been supporting patients with overweight and obesity in their weight loss journey for over 3 years with their personalized, evidence-based approach to care. Nourish has seen meaningful results for their weight loss pathways for patients attempting to lose weight without GLP-1s, with 74% of patients losing weight in less than 3 months.

Given the growing utilization of GLP-1s and limitations noted above, Nourish has launched clinical pathways that are specifically designed to support patients who are currently on GLP-1s or who have recently

discontinued. Each pathway is grounded in a strong behavioral foundation, which works to optimize nutrition, lifestyle, and behaviors. Nourish patients in each pathway have access to 1-1 sessions with a registered dietitian (RD), as well as access to the Nourish app which includes features such as meal logging and AI-generated macro tracking, symptom tracking, on demand chat with dietitian, meal planning, and more. These features turn the RD's evidence-based recommendations into practical tools for patients to apply, while providing data to help RDs tailor dietary recommendations and monitor progress throughout their care.



## GLP-1 Companion

This pathway is designed for patients currently taking GLP-1s. This program aims to optimize medication effectiveness by prioritizing the following:



### Managing Side Effects

Nourish RDs support patients with guidance on meal timing, meal composition, portion sizes, hydration, and fiber intake to reduce nausea, vomiting, constipation and GI discomfort.



### Preventing Muscle Loss

Patients are encouraged to ensure they are consuming adequate protein intake (1.2–1.6g/kg body weight) and incorporating resistance training to reduce the risk of muscle loss.



### Establishing Realistic Weight Loss Expectations

Nourish RDs provide evidenced based counseling on sustainable and safe weight loss, considering body composition, weight targets, history of weight fluctuation, and efficacy of prescribed medication.



### Consideration for Discontinuation

Nourish RDs work with patients to help them make informed decisions, alongside their prescribers, about when to transition into the off-ramp program alongside down-titration or discontinuation of GLP-1 therapy, as appropriate.



### Screen and Prevent Nutrient Deficiencies and Risk for Malnutrition

Nourish RDs work with patients to ensure their diet incorporates foods rich with iron, B12, calcium, and vitamin D to prevent deficiencies caused by suboptimal intake with consideration for supplementation as appropriate. In addition, Nourish RDs can also screen for and treat or prevent malnutrition.



### Optimizing Long-Term Eating Habits

In addition to dietary recommendations, Nourish RDs support patients by teaching balanced meal structure, mindful eating, and hunger awareness strategies, with consideration for cultural and flavor preferences, budget and access to food.

## GLP-1 Off Ramp

This pathway is designed for patients who are in the process of discontinuing or have recently discontinued medication. This program aims to help patients maintain the GLP-1 related health improvements by prioritizing the following:



### Metabolic Support

Nourish RDs work with patients to gradually adjust and monitor their nutritional intake in tandem with changes in GLP-1 therapy to prevent sudden increases in appetite, cravings, body fat storage and reductions in basal metabolic rate.



### Support for Sustainable Eating Habits

Nourish RDs continue to build on foundational meal planning skills with focus on establishing structured, nutrient-dense meals to maintain satiety without medication-induced appetite suppression.



### Manage Appetite Changes

Nourish RDs support patients with mindful eating and intuitive eating strategies to prevent overeating.



### Weight Maintenance

Through behavioral coaching, personalized meal planning, and physical activity recommendations, Nourish ensures that patients have the tools to maintain their weight loss as well as support to prevent regain.

Nourish recently launched a study to measure the early impact of GLP-1 pathway, specifically how the GLP-1 Companion and GLP-1 Off Ramp pathways impact weight loss, side-effects and medication adherence, and long-term maintenance of health benefits.

# Survey Methodology

## Study Design & Participants

Between November and December 2024, Nourish surveyed 4,232 participants to assess:

- The current state of GLP-1 usage, including awareness, utilization rates, and interest
- The impact of Nourish RD-led nutrition interventions on weight loss for all patients, regardless of GLP-1 status
- The impact of GLP-1s when paired with Nourish, including how Nourish impacts drug related side effects and medication adherence
- The impact of Nourish on weight following GLP-1 discontinuation

### Survey Participant Demographics

Female (89%)

Male (11%)



White (89%)

Black (10%) Asian (4%) Other (8%)



Suburban/ Urban (85%)

Rural (15%)



## Methodology

- All participants surveyed completed the Nourish sign up flow and shared their email address. Of the 4,232 participants surveyed, 514 were excluded. Exclusions listed below:



Patients reporting a current eating disorder or history of eating disorders (N=298)



Patients who did not complete the survey in full (N=216)

- Final N of participants included in the analysis = 3,718

- Patients were separated into Nourish and Non-Nourish according to their survey responses as to whether they worked with a Nourish RD to achieve weight loss. Based on their responses, we classified patients accordingly:

2,881

Nourish patients

837

Non-Nourish patients

- Weight change was calculated using patient reported values for current weight, weight 6 months prior, weight 12 months prior.
- Patients were classified by history of GLP-1 usage based on patient reported values:

**Never GLP-1 Patients:**

Reported no history of taking GLP-1s

**Never GLP-1 Patients:**

Reported currently usage of GLP-1s

**Never GLP-1 Patients:**

Reported prior usage of GLP-1s, but no current usage

- Statistical significance was determined using t-tests.

12%

had a diagnosed cardiovascular, kidney, or metabolic condition

97%

stated they wanted to lose weight in the past year

55%

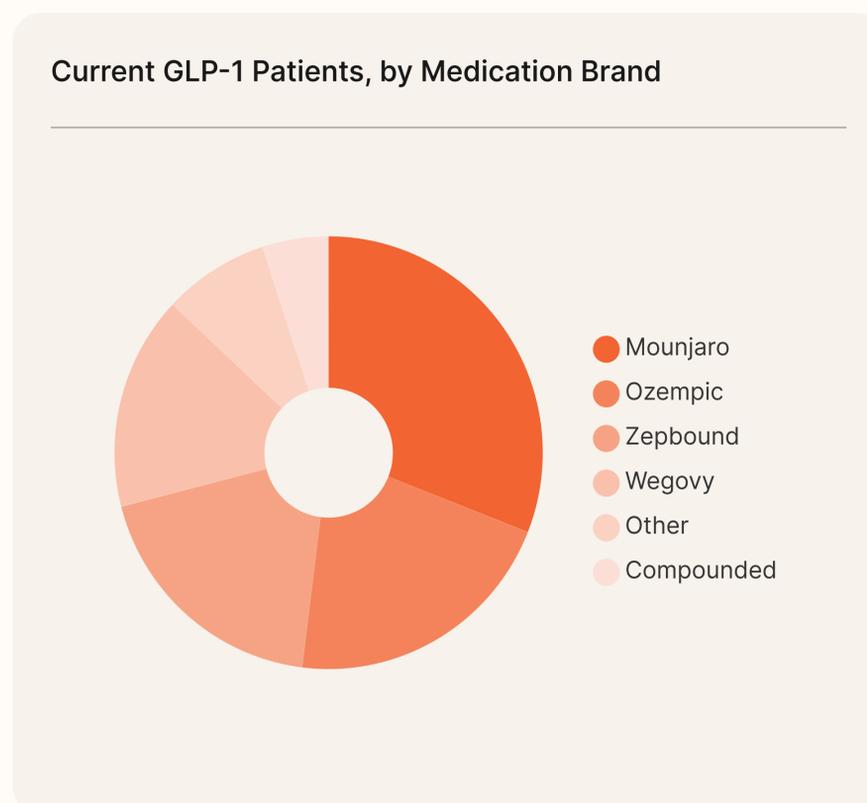
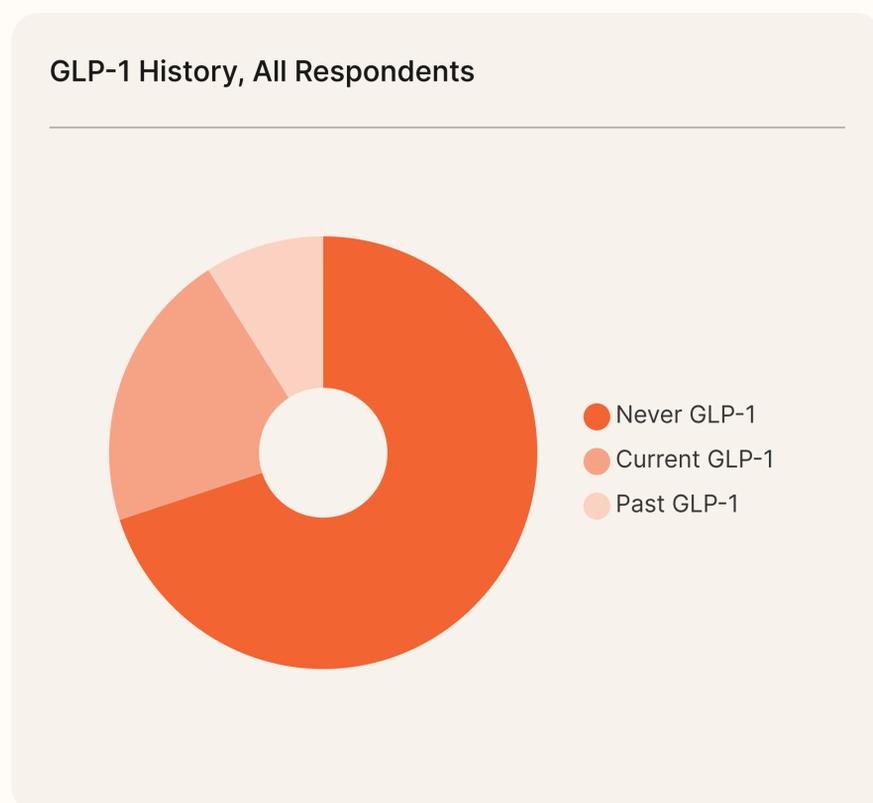
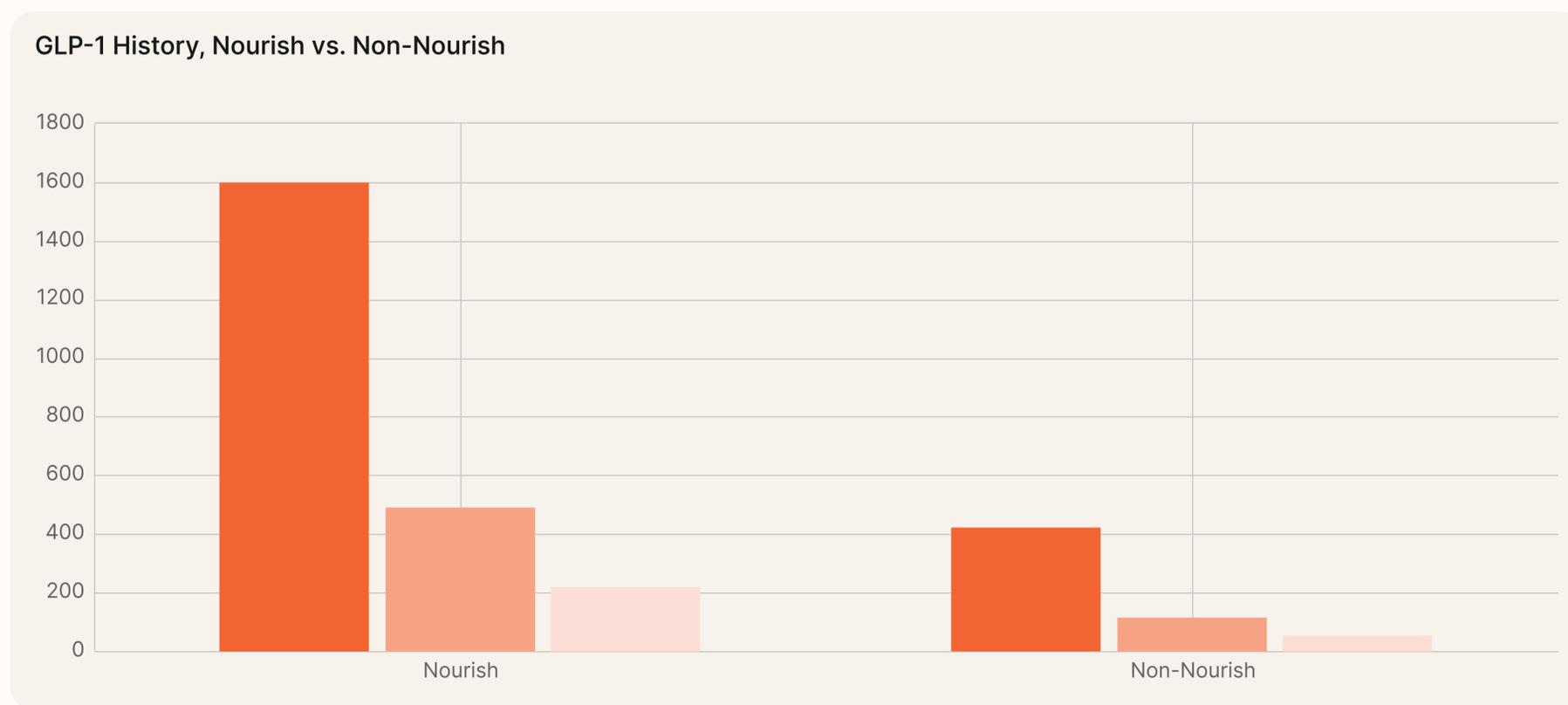
report anxiety or depression

# Results & Impact

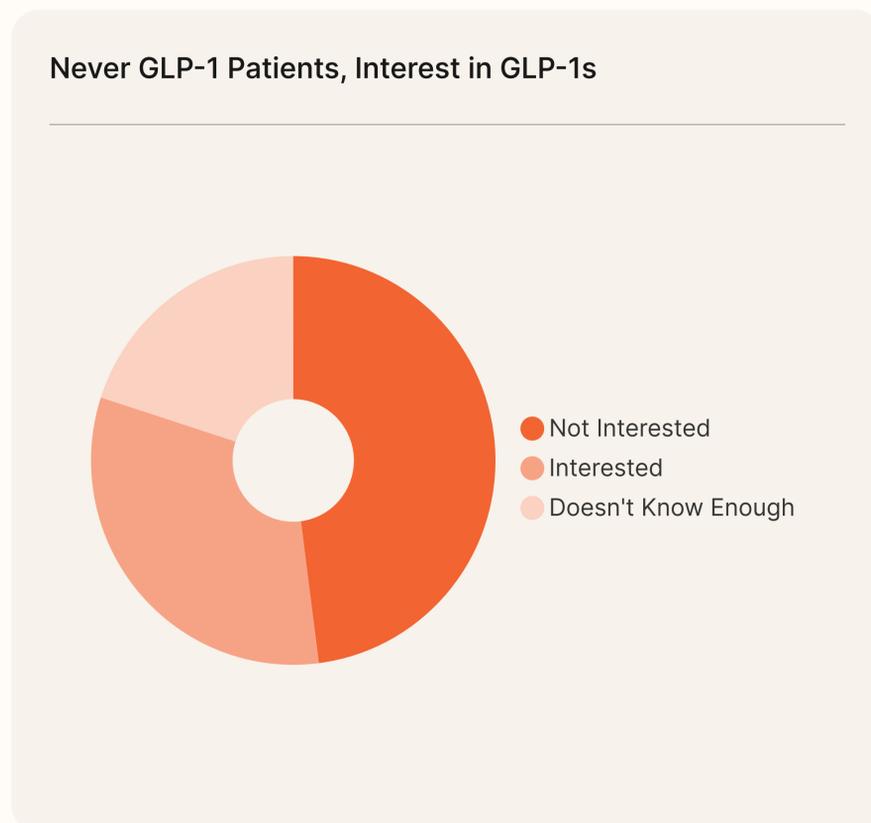
## 6.0 Patient GLP-1 History & Appetite

Nourish asked participants to share their awareness and history with GLP-1s. Awareness of GLP-1s as a tool for weight loss is high - 81% of patients surveyed had heard of GLP-1s, underscoring how prominent they have become in the current discourse around weight loss. Among respondents, 21% reported current GLP-1 use ('Current GLP-1 Patients'), while 9% had taken them in the past ('Past GLP-1 Patients').

Nourish asked patients to share their history of taking GLP-1s. Of patients surveyed, ~21% were Current GLP-1 patients, and ~9% were past GLP-1 patients.



Even among patients who have never used GLP-1s, interest is growing: 34% expressed a desire to try these medications in the future. However, among those not interested, most cited a preference for lifestyle-based weight loss through nutrition (83%) and/or exercise (61%), along with concerns about side effects (65%).



## These findings highlight three key insights:

**1** GLP-1s are increasingly seen as a mainstream tool for weight loss, with nearly ~60% of patients having tried a GLP-1 or expressing interest to try in the future

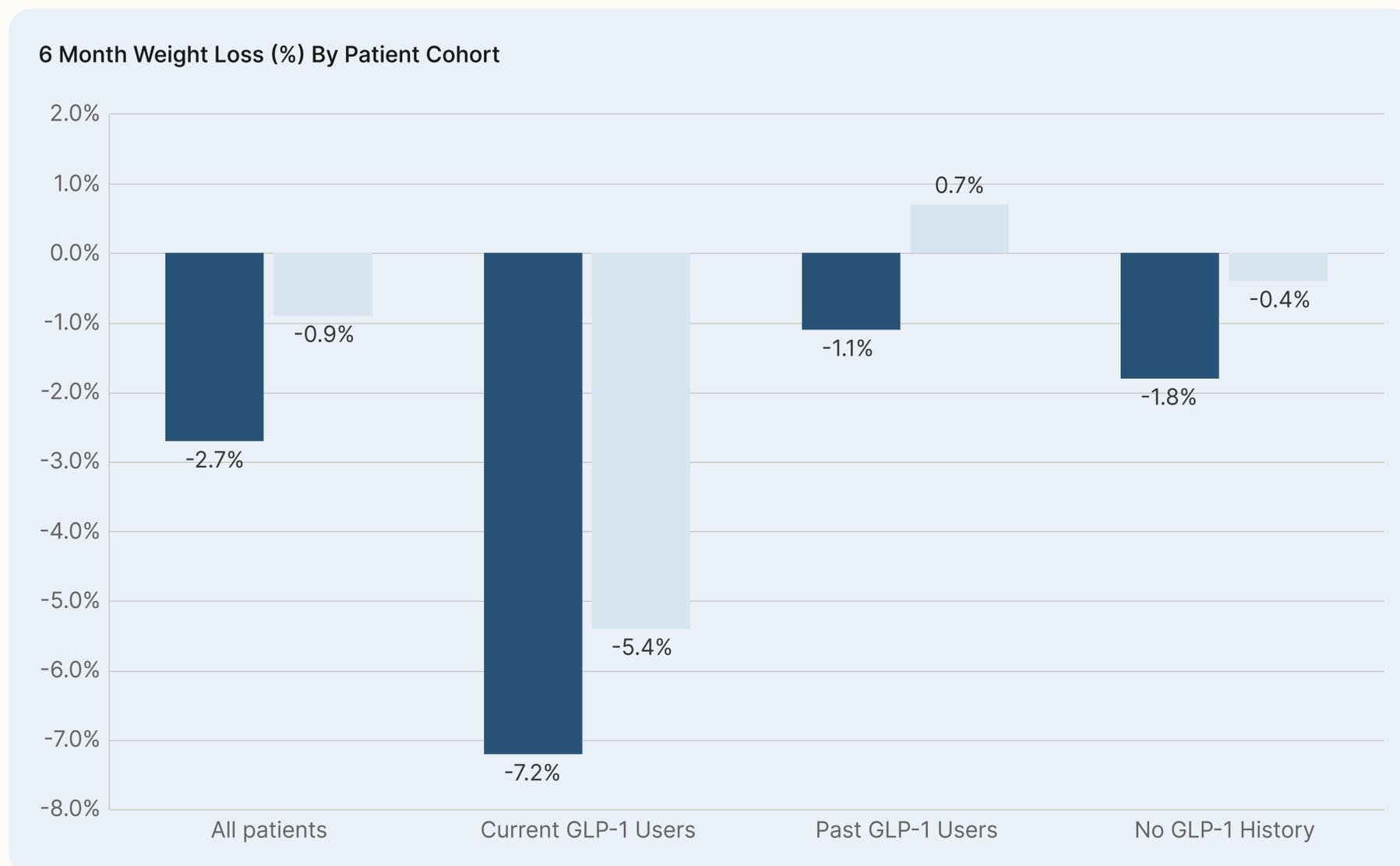
**2** Despite the growing interest, patients have concerns about starting these medications, most notably concerns on side effects

**3** There is still meaningful demand for a non-pharmacological approach to weight loss, with patients preferring to try changes to nutrition and lifestyle as an alternative

Nourish is uniquely positioned to support patients regardless of the path they choose, with pathways designed to help make GLP-1 treatment more effective with reduced side effects for patients who go on the medication, as well as an alternative pathway for those patients who would want to lose weight through nutrition and lifestyle.

## 6.1 Nourish Impact on Weight Loss

Nourish patients see greater weight loss results than non-Nourish patients, regardless of their GLP-1 medication status.



After 6 months, patients working with a Nourish registered dietitian achieved a significantly greater average reduction in body weight compared to those not working with Nourish (-2.7% vs. -0.9%,  $p < 0.001$ ). These findings held true across patient subgroups:

- **Current GLP-1 Patients:** Nourish users lost 7.2% of their body weight, compared to 5.4% for non-Nourish patients ( $p = 0.009$ )
- **Never GLP-1 Patients:** Nourish users lost 1.8%, versus 0.4% for non-Nourish ( $p < 0.001$ )
- **Past GLP-1 Patients:** Nourish users lost 1.1%, while non-Nourish participants regained weight (+0.7%). Although not statistically significant ( $p = 0.091$ ), this trend suggests a positive impact on weight maintenance following medication discontinuation.

These results speak to the value of Nourish as an effective solution for weight loss for patients at any stage of their weight loss journey independent of GLP-1s.

This is also reflected in patients sentiment - 80% of Nourish patients stated that Nourish was helpful in their weight loss journey. Patients stated that their Nourish RD helped them to make improvements to their diet, build a better understanding of nutrition's role in weight loss, and increase their sense of accountability. These outcomes reflect Nourish's holistic approach to weight loss treatment, which goes beyond establishing a calorie deficit to help patients drive behavior change that is ultimately critical for driving sustainable weight loss.

79%

Of patients said that their Nourish RD was helpful in helping them achieve their weight goals

All Nourish Patients, Top Reasons Cited for why working with a Nourish RD helped with weight loss



76%

Improved diet (i.e., quality of food, quantity of food, or both)



69%

Increased knowledge on the importance of nutrition for weight loss



61%

Increased accountability in making progress towards my weight goals



54%

Improved relationship with food

## 6.2 Weight Loss Impact for Current GLP-1 Patients

Among Current GLP-1 patients, patients working with a Nourish RD achieved 33% greater weight loss than those who did not (7.2% vs. 5.4%,  $p = 0.009$ ).

In addition to a greater average weight reduction, the majority of GLP-1 + Nourish patients achieved clinically meaningful results: 64% lost at least 5% of their body weight, and 30% lost at least 10% over six months.

### In just 6 months...

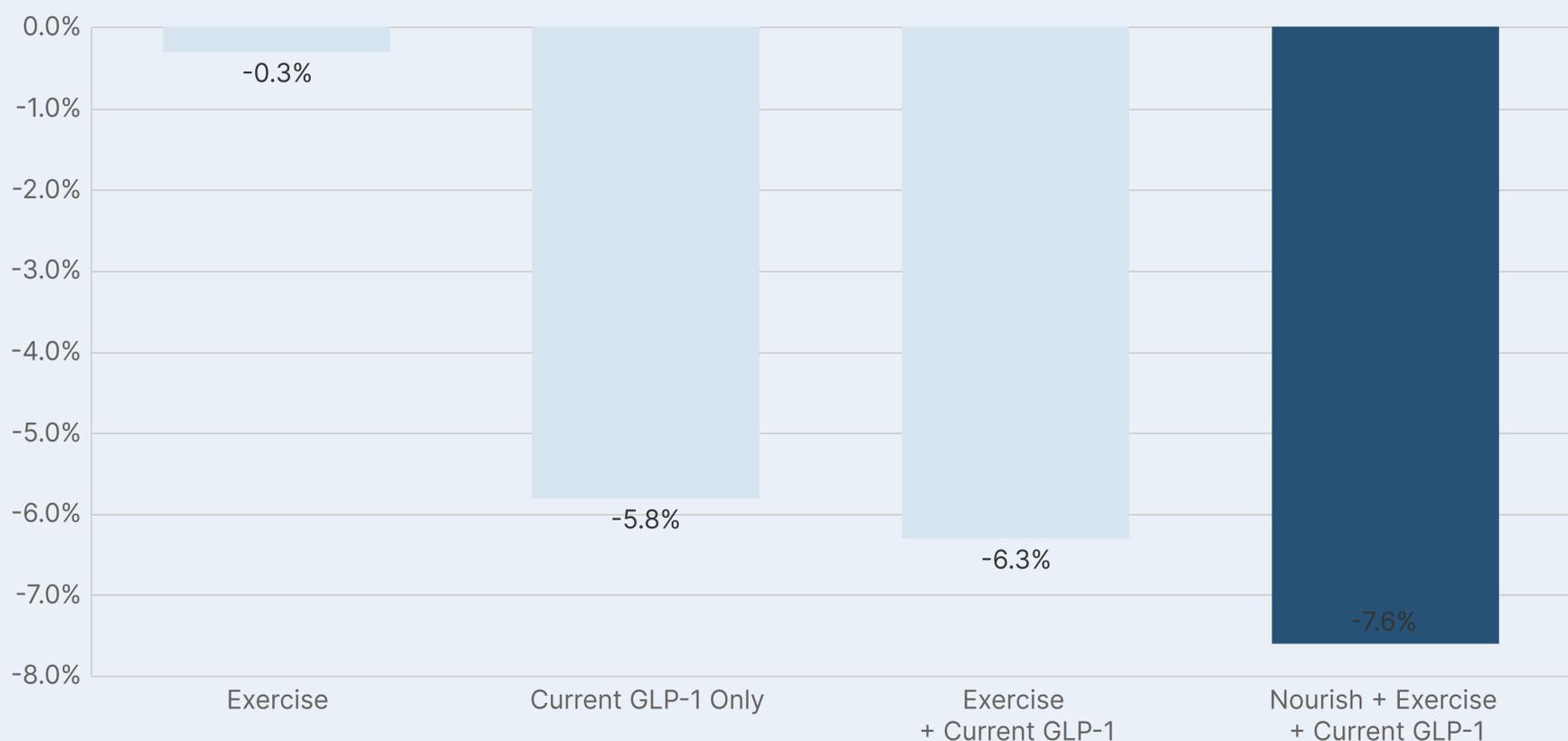
**64%** of Nourish patients on GLP-1s lost at least 5% weight

**30%** of Nourish patients on GLP-1s lost at least 10% body weight

Weight loss results were also analyzed in terms of what tools patients used for weight loss across GLP-1s, Nourish, and exercise. This analysis revealed that the combination of GLP-1s, Nourish, and physical activity yielded the greatest weight loss, with those patients achieving an average 7.6% weight loss—1.4x greater than patients on GLP-1s who exercised but did not use Nourish (6.2%,  $p < 0.012$ ).

These findings highlight the value of a multifactorial approach to obesity treatment, and demonstrates the value of Nourish GLP-1 companion program in helping patients on GLP-1s optimize for the greatest health benefits.

6 Month Weight Loss (%) By Weight Loss Intervention



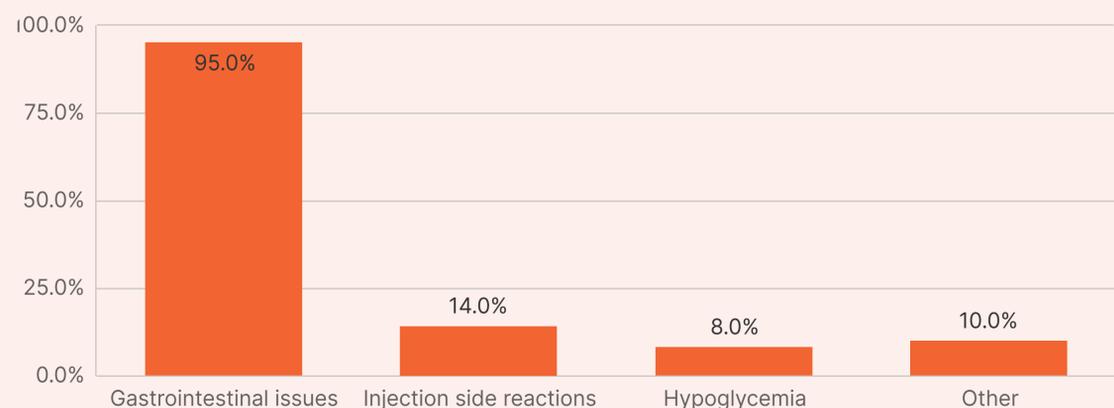
### 6.3 Medication Persistence & Reduced Side Effects

Survey participants were asked to report their experience on GLP-1s in terms of side effects and medication adherence.

64%

of survey respondents reported experiencing side effects while taking GLP-1s

Top Side Effects Reported by Current GLP-1 Patients



Current GLP-1 Patient Adherence



63%

of Nourish GLP-1 patients report improved side effects since working with their RD.

Among Current GLP-1 patients, 64% reported prevalence of side effects and 90% of those patients reported GI side effects specifically. As highlighted above, Nourish offers patients on GLP-1s a specific nutrition protocol designed to help decrease the severity of side effects. This approach has proved to be effective, as 64% of patients with side effects reported improvements in side effects since working with their Nourish RD, and nearly 70% reporting that Nourish was helpful or very helpful in managing side effects.

The positive impact of Nourish on GLP-1 RA side effect profiles likely resulted in improved medication adherence for participants, which is critical to avoid

premature drug discontinuation. When asked about their adherence over the past 30 days, only 15% of Nourish patients reported missing a dose, compared to 24% of non-Nourish patients ( $p < 0.05$ ). These results point to the value of Nourish's GLP-1 companion pathway in helping patients reduce side effects and stay on the medication more consistently than they could without structured support.

Overall, 83% of Current GLP-1 patients who used Nourish stated that their Nourish RD was helpful to their GLP-1 journey, reinforcing the value of Nourish's nutrition therapy in enhancing patient experience and outcomes for patients on GLP-1s.

## 6.4 Mitigation of Rebound Weight Gain

Past GLP-1 Patients were asked to report their reasons for discontinuing. Top reasons reported were side effects (44%) and cost (40%). Notably, a smaller portion (24%) reported stopping because they did not achieve the weight loss they were expecting. These insights highlight how Nourish's GLP-1 companion pathway- by improving side effects and optimizing for greater weight loss- may play a role in preventing early discontinuation.

As noted below, a primary concern for past GLP-1 patients is the risk of rebound weight gain. Nourish's GLP-1 Off Ramp pathway was designed to support patients through this critical transition and sustain the results achieved while on medication through personalized nutrition therapy.

### Past GLP-1 Patients, Reason for Discontinuing

**71%** Increased knowledge on the importance of nutrition for weight loss

**63%** Improved diet (i.e. quality of food, quantity of food, or both)

**65%** Increased accountability in making progress towards my weight and goals

**59%** Improved relationship with food

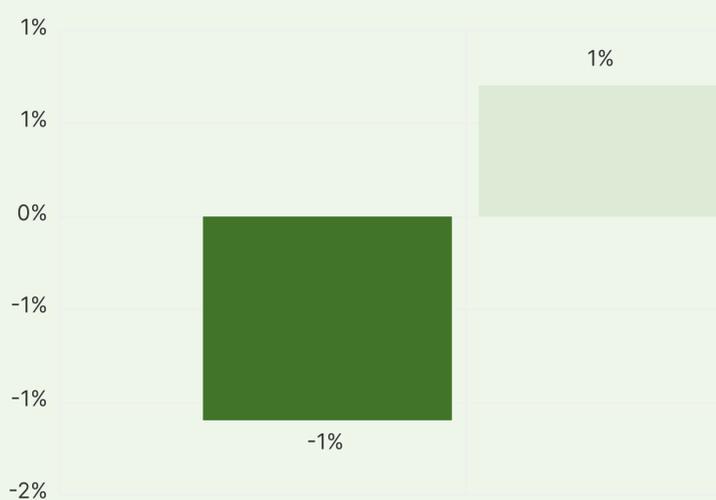
**51%** Increased awareness of hunger and fullness

### Past GLP-1 Patients, Reported Nourish Helpful

**58%**

of past GLP-1 patients found their Nourish RD helpful in maintaining weight loss since stopping GLP-1s

### 6 Month Weight Loss (%), Past GLP-1 Users



Preliminary results are promising. Among Past GLP-1 patients, those using Nourish lost an average of 1.1% of their body weight over 6 months, while those not using Nourish gained 0.7%—a reversal of progress. Although the difference was not statistically significant ( $p < 0.1$ ), this directional trend suggests Nourish may help prevent rebound weight gain following discontinuation.

Further, nearly 60% of Past GLP-1 patients reported that Nourish was helpful in preventing weight regain—reinforcing the importance of ongoing support post medication. Together, these findings point to the value of Nourish's Off Ramp pathway in helping patients sustain long term health benefits.

## Cost Impact

The economic burden of obesity and GLP-1 treatments is substantial, impacting payers and employers who choose to cover GLP-1s for obesity treatment. Nourish's GLP-1 care pathways drive significant cost savings by reducing waste from premature GLP-1 discontinuation and enhancing weight loss outcomes.

### Premature discontinuation of GLP-1s (e.g., within 12 weeks) results in wasted medication costs

- 58% of GLP-1 users discontinue within 12 weeks [12]
- Costs associated with premature discontinuation:
  - $730 \text{ employees} * 58\% * \$1,000 * 3 \text{ months} = \$1.27\text{M}$
- Nourish prevents discontinuation by helping patients reduce side effects
  - Based on Nourish survey data, 44% of patients discontinue GLP-1s because of side effects
  - Based on Nourish survey data, 63% of Nourish patients report improved side effects since working with their Nourish RD

Expected cost savings from using Nourish:

- $\$1.27\text{M} * 44\% * 63\% = \$352,044$

### Key assumptions:

- 730 employees within a 10,000 employee group are on GLP-1s (7.3% of employees are on GLP-1s, [22])
- Average monthly cost of GLP-1 medication: \$1,000 per employee [23]

### Significant savings generated through additional BMI reduction

- Nourish helps reduce total cost of care by driving greater BMI reduction for GLP-1 patients
  - Weighted average BMI change for Nourish participants (6 months): 9.66%
  - Weighted average BMI change for non-Nourish participants (6 months): 7.52%
- As a result, Nourish can generate incremental \$2,442 annual cost savings (weighted avg.) for each employee on GLP-1 medication
  - Weighted average per-employee annual cost savings for Nourish participants: \$8,810
  - Weighted average per-employee annual cost savings for non-Nourish participants: \$6,368
  - $\$8,810 - \$6,368 = \$2,442$
- $730 \text{ employees} * \$2,442 = \$1.78\text{M}$

## Conclusion: A Smarter, More Sustainable Approach to GLP-1 Therapy

GLP-1s are a powerful tool, but they are not a standalone solution to the obesity epidemic. To achieve the greatest benefits, patients need the right support at every stage of their journey—whether they are considering, starting, actively using, or discontinuing GLP-1s. Nourish has demonstrated that personalized nutrition therapy plays a critical role in enhancing outcomes by helping patients lose more weight than they would on medication alone, improving adherence and side effect management, and ensuring long-term health benefits by preventing rebound weight gain after discontinuation. By addressing these key challenges, Nourish enables patients to maximize the clinical impact of GLP-1s while reducing overall healthcare costs—creating a more effective, sustainable approach to obesity care.



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