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Optimizing Obesity Management With GLP-1 Agonist Medication Through Mobile Health Technology, Nutrition Therapy, and Progressive Strength Training: A Retrospective Program Review

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ABSTRACT

Background: GLP-1 RAs are effective in treating obesity; however, they typically result in significant loss of skeletal muscle mass. Real-world evidence to inform systematic guidelines and clinical implementation for preserving skeletal muscle mass and reducing cardiometabolic risk with lifestyle modifications on GLP-1 RAs remains limited.

Objective: This study evaluated the effectiveness of the TouchCare Method, a lifestyle intervention incorporating nutrition and exercise with GLP-1 RAs, for improving body composition and cardiometabolic risk.

Methods: A retrospective chart review included patients enrolled in Bucks Health and Wellness between February 2024 and September 2025, for at least 12 month ($n = 187$). The TouchCare Method incorporates registered dietitian counseling, progressive exercise programming, mobile self monitoring, and body composition analysis during visits. Primary outcomes included: clinically significant weight loss ($> 10\%$ of body weight), proportion of weight loss from skeletal muscle mass, and changes in total-C, LDL-C, Apolipoprotein B, Triglycerides, HbA1c, and blood pressure at 12 months.

Results: Patients adherent to the TouchCare Method for 12 months were included in the final analysis ($n = 171$). Clinically significant weight loss ($\geq 10\%$) was achieved by 69.56% ($n = 139$) of patients. Skeletal muscle mass accounted for $12.22\% \pm 8.73\%$ of total weight loss. Among prediabetic patients ($n = 95$), 74.7% ($n = 71$) reached euglycemia by 12 months. Patients with Stage II hypertension or higher (77% of the cohort) demonstrated improved blood pressure control, with most reaching $< 140/90$ mmHg. Patients with HLD experienced significant reductions in Total-C (24.71 ± 23.31 mg/dL), LDL-C (-13.75 ± 21.51 mg/dL), and ApoB (-14.24 ± 16.19 mg/dL). All lipid and HgA1c changes were statistically significant ($p < 0.001$).

Conclusion: The TouchCare Method may improve GLP-1 RA treatment outcomes by providing comprehensive structured lifestyle interventions supporting clinically significant weight loss while preserving skeletal muscle mass and improving cardiometabolic risk factors.

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1 | Introduction

Glucagon-like peptide receptor agonist (GLP-1 RA) medications have changed the landscape of weight management in clinical practice. Clinically significant weight loss has been consistently achieved in clinical trials using weekly injectable versions of GLP-1 agonists, such as Tirzepatide. For example, The SURMOUNT-1 Trial has established that treatment with Tirzepatide at the maximum dose of 15 mg produces clinically significant weight loss in 72 weeks, with an average of 21% total body weight loss [1]. However, despite growing evidence for clinically significant weight loss with other incretin agonists, more real-world evidence is necessary to establish guidelines for comprehensive management to improve body composition and weight-related comorbidities. According to a 2024 poll of 1500 US adults aged 18 years or older, 1 in 8 adults reported having used a GLP-1 RA [2]. The cost of GLP-1 medication is significant and it is important to optimize results to improve outcomes when using these medications [3]. Roper utilization of GLP-1 medications has the potential to improve health outcomes related to cardiometabolic health and body composition. It is important to evaluate the impact of systematic lifestyle interventions in combination with GLP-1 RAs in a real-world setting. Patients with obesity are more likely to be diagnosed with dyslipidemia, hypertension, and prediabetes than patients with a BMI < 30 [4]. Therefore, a comprehensive program designed to improve body composition and reduce cardiometabolic risk alongside weight loss may improve clinical outcomes and the cost-effectiveness of GLP-1 RAs.

Loss of skeletal muscle mass (SMM) is a concern with weight loss, especially with GLP-1 RAs. Clinical trials report that 25.7%–45.2% of weight loss may be attributed to lean body mass [5, 6]. Since over 50% of lean body mass is composed of skeletal muscle [7], loss of SMM with GLP-1 medications may range from 12.5% to 22.5% of total weight loss. A recent review of 22 randomized control trials demonstrated that loss of lean mass represents a significant component of GLP-1 RA associated weight loss [8]. Another literature review of 38 studies analyzing weight loss in both diabetic and non-diabetic cohorts found that significant muscle mass loss was observed primarily in non-diabetic patients. Notably, liraglutide treatment in non-diabetic individuals resulted in muscle mass loss of 16.9% of total body weight loss. In contrast, a limited number of studies in this review evaluated semaglutide use and body composition analysis. Changes in muscle mass on semaglutide therapy were not clinically significant, likely due to the methodological heterogeneity [9]. These findings highlight important variability in muscle mass outcomes across GLP-1 RAs and populations and emphasize the need for additional studies incorporating standardized treatment protocols with consistent body composition analysis.

It is important to monitor body composition throughout weight loss to understand the impact of diet, exercise and GLP-1 medication. A sub-analysis of the SURMOUNT-1 trial evaluated 160 participants who were treated with tirzepatide and underwent dual-energy X-ray absorptiometry (DEXA) assessments at the baseline and Week 72 of Tirzepatide treatment and found that 25% of the weight lost consisted of lean mass [10]. However, this analysis did not distinguish between skeletal muscle mass and other components of the lean body mass, such

as organs and body water. Although DEXA has served as a frame of reference for body composition for the past 39 years, its use in longitudinal monitoring remains limited due to cost, accessibility outside research settings, and standardization across scanner manufacturers [11]. In contrast, bioelectrical impedance analysis offers a practical, non-invasive alternative for consistent monitoring of skeletal muscle mass and body composition changes in both clinical and real-world settings.

Skeletal muscle is a metabolically active tissue, supporting resting metabolic rate; therefore, significant loss of skeletal muscle mass can lead to adaptive thermogenesis, making long-term weight maintenance difficult [12]. Regular monitoring of body composition provides an opportunity to both educate patients on the impact of lifestyle changes on weight loss and for adjustments to comprehensive lifestyle programs to reduce loss of skeletal muscle mass before it becomes clinically significant. As noted in a recent 2025 literature review, emerging practice recommendations supporting the integration of nutrition therapy, resistance training and body composition analysis on GLP-1 RA treatment have been suggested, but specific strategies have yet to be systematically implemented in clinical practice [13].

Literature supports the theory that resistance training and high protein diets (> 0.8 g/kg body weight) improve the maintenance of skeletal muscle mass during weight loss [14–17]. One study established that regular exercise in combination with liraglutide was superior to GLP-1 RA therapy alone in maintaining weight loss over a 1-year period [18]. However, there is a need for more evidence to evaluate high protein diets and resistance training in combination with GLP-1 medications to produce specific guidelines for preserving skeletal muscle mass. Although many landmark GLP-1 RA studies, including SURMOUNT-1 and STEP-1, have incorporated lifestyle interventions, such as nutrition counseling and exercise guidance, real-world evidence evaluating the effectiveness of structured lifestyle programs for maintaining skeletal muscle mass remains limited [1, 19].

Research suggests that weight loss outcomes improve with self-monitoring and tracking. More frequent self-weighing over a consistent period of time (daily or weekly) is associated with greater weight loss, less weight regain, and better weight gain prevention [20–22]. A 2019 systematic review showed that consistent use of wearable activity trackers produced a significant increase in activity level. Specifically, it showed an increase in daily step count and energy expenditure as compared to controls who were not utilizing activity trackers [23]. Additionally, patients with “more complete” dietary records lost significantly more weight than those who had less complete records [24]. This suggests that incorporating self-monitoring into a weight loss program can improve weight loss and prevent rebound weight gain by solidifying behavior change. With increased access to mobile technology, remote monitoring provides a convenient and cost-effective solution for supporting patients. A randomized-controlled trial showed that 3 weeks of remote coaching was effective at eliciting behavior change with nutrition and activity level; importantly, participants increased fruit and vegetable intake and decreased sedentary time [25]. A recent Mayo Clinic study found that a digital lifestyle intervention produced superior results to an in-person lifestyle intervention for obesity. Participants achieved increased total

body weight loss (TBWL) over a 6-month period with an average of greater than 5% TBWL [26]. Another retrospective program review assessed the impact of a digital obesity service combined with tirzepatide for obesity treatment. The study used a mobile app to provide lifestyle coaching including meal and exercise plans and found that consistent weekly weight tracking and communication with the health coach were the strongest predictors of long-term adherence and weight loss, with medication adherent patients achieving a mean weight loss of 22.6% of body weight [27].

This study evaluated The TouchCare Method (TCM), an interdisciplinary obesity-management program which combines nutrition, exercise, and mobile health technology with GLP-1 medication to improve weight loss outcomes. Prior literature supports the integration of resistance training and nutrition counseling (including a high-protein diet) alongside GLP-1 therapy to preserve skeletal muscle mass [28]. Worldwide, the recognition of the need for comprehensive care including nutrition, exercise, and self-monitoring to support behavior change is recognized. The National Health Service of England requires “wraparound support which incorporates nutritional and dietetic advice as a minimum and access to behavior change components, as a mandatory requirement to access treatment” [29]. A joint advisory statement from the American College of Lifestyle Medicine, the American Society for Nutrition, The Obesity Medicine Association, and The Obesity Society also calls for the integration of evidence-based nutrition therapy and lifestyle assessment to be incorporated into care models for obesity treatment with GLP-1 medications [13].

The STEP 1 Trial of semaglutide for the treatment of obesity incorporated lifestyle counseling aimed at supporting adherence to a reduced-calorie diet and increased physical activity, with counseling sessions conducted every 4 weeks. Participants utilized smartphone apps or physical diaries for self-monitoring. However, the STEP-1 trial did not incorporate a regular and comprehensive assessment of body composition with the inclusion of skeletal muscle mass [19]. Other program reviews have evaluated the effectiveness of weight loss programs with remote monitoring and health coaching; however, these studies have not addressed their effectiveness at maintaining skeletal muscle mass and reducing cardiometabolic risk on GLP-1 medication [27, 30, 31]. A 2026 randomized controlled trial assessed the effectiveness of oral anti-obesity medications with and without behavioral weight management programs and found that participants receiving medication and behavioral treatment lost significantly more weight than those receiving medication alone. This study suggests that wraparound behavioral programs may improve results on weight loss medication but did not assess changes in body composition or cardiometabolic risk factors beyond body weight [32]. Further research is needed to evaluate the effectiveness of similar “wraparound” programs, including those generalizable outside England.

Our primary objective was to evaluate the effectiveness of the TouchCare Method, an integrated lifestyle intervention which includes mobile health technology, resistance training, nutrition support, and self-monitoring for improving outcomes on GLP-1 medication. These outcomes include improvement in body

composition, reduction in the percentage of weight lost as skeletal muscle mass, and reduction in cardiometabolic risk including prediabetes, hyperlipidemia, and hypertension.

2 | Materials and Methods

2.1 | Description of Article Type

The TouchCare Method was implemented at Bucks Health and Wellness, an obesity management program for the underserved community in Milwaukee, Wisconsin. A retrospective chart review was conducted to evaluate the effectiveness of the TouchCare Method for optimizing outcomes on GLP-1 medications, specifically by improving body composition and reducing cardiometabolic risk factors. The chart review included all patients enrolled in the Bucks Health and Wellness program for at least 12 months between February 2024 and September 2025. Full inclusion and exclusion criteria are described below. Prior to enrollment in the Bucks Health and Wellness Program, all patients were offered the opportunity to review and sign an optional Observational Research Consent Form. Only patients who opted-in for observational research were included in this chart review. An IRB exemption was not granted as this project was classified as a retrospective study involving review of existing clinical data. This chart review was conducted and reported in accordance with STROBE guidelines.

2.2 | Bucks Health and Wellness Program Structure

Bucks Health and Wellness is an obesity management program that provides obesity management care services to an underserved community in Milwaukee, Wisconsin. The program specifically utilized the TouchCare Method (TCM) to provide a comprehensive approach to obesity care that combines medicine, exercise, and nutrition to optimize body composition and treat weight related conditions. Specifically, the TouchCare Method (TCM) included remote monitoring of nutrition, exercise, and weight through a mobile application; regular visits with a physician or nurse practitioner (9 visits over a 12-month period); visits with a registered dietitian (5 visits over a 12-month period); an individualized meal plan designed to achieve a calculated energy deficit, with macronutrient targets of 35% protein, 40% carbohydrates, and 25% fat; and a prescribed at-home strength training program to be completed weekly. Energy deficits were calculated based on the individual and aimed at 1–2 lbs/week of weight loss. At each patient visit, providers review app engagement with the meal plans and exercise programs. These components were combined with Tirzepatide, which was dosed individually according to provider recommendations, starting with 2.5 mg and progressing to 15 mg as tolerated, with increases in 2.5 mg increments each month as appropriate. Maintenance doses were maintained based on weight loss goals (goal of 5–8 lbs of weight loss per month) as well as tolerability. Patients completed a biometric assessment using the InBody bioelectrical impedance scale at each in-person visit (approximately 6 × per year). The same device was used throughout the entire study period and was calibrated every time it restarted, once monthly. Biometric

assessments used for this review were conducted at the 6- and 12-month timepoints during program participation. As a community-based program rather than a formal study, follow-up intervals were subject to participant scheduling variability and were not governed by strict, predefined time points. Participation in the program included utilization of the TouchCare Method App, which provided access to and tracking capabilities of patients' personalized meal plans, expert-designed strength training programs and AI health coaching. The AI health coach sent personalized insights to patients daily, encouraging them to log meals and exercises and to ask any questions to the health coach. Patients were encouraged to utilize the mobile app daily to log meals and exercise, and weekly to log GLP-1 RA doses. Participants also had direct access to their clinical care team through mobile app messaging for any clinical questions or guidance.

2.3 | Study Design & Endpoints

The primary endpoint was the percentage of participants achieving $\geq 10\%$ of total body weight loss. An associated endpoint was the percentage of weight loss as skeletal muscle mass (assessed by change in skeletal muscle mass divided by change in total body weight, as measured via InBody 570). Secondary outcomes were changes in cardiometabolic risk factors (LDL-C, ApoB, total-C, HbA1c, and blood pressure), assessed by absolute change and the percentage of participants with abnormal values reaching a normal range. These values were pulled from a de-identified medical chart review and from LabCorp reports.

2.4 | Data Collection and Participants

Inclusion criteria for the Bucks Health and Wellness Program were age 18–64 years, residence in Milwaukee, Wisconsin, household income meeting Section 8 housing eligibility criteria, obesity ($BMI \geq 30 \text{ kg/m}^2$), and willingness to initiate treatment with an FDA-approved GLP-1 medication. Exclusion criteria included: Age > 65 years or < 18 years, patients not residing in Milwaukee, WI, not meeting income threshold, inability to speak English or use mobile app technology in written English, $BMI < 30 \text{ kg/m}^2$, diagnosis of Type 1 or Type 2 diabetes, current pregnancy or actively trying to conceive, bariatric surgery within the past 3 years, patients unwilling to take GLP-1 medication, patients who have used GLP-1 medication within the past year, and physical inability to engage in exercise as assessed at initial visit with physician.

2.5 | Data Analysis

Data were obtained from our HIPAA compliant patient app, TouchCare Method, Athena Health EHR, and Labcorp reports. Patients were included who completed 12 months of the *Bucks Health and Wellness* program between February 2024–September 2025. Data underwent quality checks for completeness and consistency with inclusion criteria.

Patient demographics, biometrics, and changes in biomarkers were analyzed with descriptive statistics. Statistical significance

was determined with a paired sample *t*-test, with significance defined as $p < 0.05$. For patients with missing lab results at the 12-month time point, 6-month values were used to assess total average change by 12 months. Patients with missing values due to blood tests not being performed or lab errors were excluded from the dataset. The total number of patients analyzed for each cohort is reported below.

Patients were analyzed based on their compliance with the program. All included patients completed 12 months in Bucks Health and Wellness; however, some patients had gaps in visits or in medication management, which necessitated breaking them down by compliance with medication and/or with program visits. Subgroups were defined as follows:

- *Program-compliant*—patients attended all required provider visits and did not have a gap of greater than 3 months between provider visits at any given time period. These patients may have paused medication during their time on the program.
- *Program and medication compliant*—patients who attended all provider visits with no gaps greater than 3 months, while also taking GLP-1 medication with no pauses exceeding 8 weeks.
- *Non-compliant*— patients who did not see a provider for over 3 months were defined as non-compliant with the program, regardless of medication adherence status.

3 | Results

3.1 | Basic Demographics and Characteristics

Table 1 depicts the demographic characteristics of the program and medication-compliant population completing 6 months and 12 months in the program between February 2024 and September 2025.

3.2 | Body Composition Changes

The average baseline BMI of program and medication adherent patients was 40.31 kg/m^2 . Endpoint assessments were conducted at 12 months ± 45 days to account for varying visit schedules, as real-world implementation of the TCM involved accommodating busy patient schedules and varying timelines. Out of 309 patients completing one year of the program, 171 patients were compliant with both program visits and medication for 12 months. Body composition was analyzed at 0, 6, and 12 months for this cohort. The following results are reported for this medication and program-compliant cohort. The average percentage of total body weight loss was $17.69\% \pm 6.67\%$ at 12 months and an average weight loss of 42.46 ± 18.18 lbs. Average loss of skeletal muscle mass (SMM) as a percentage of total body weight loss (change in SMM/change in total body weight $\times 100$) was $12.22\% \pm 8.73\%$ at 12 months. Clinically significant weight loss was achieved by the majority of patients, with 69.6% losing $\geq 10\%$ of initial body weight at 12 months. Changes in body composition are described in Tables 2 and 3 below.

TABLE 1 | Demographics and patient characteristics for patients completing 12-months with Bucks Health and Wellness program with program and medication adherence.

Characteristic	Category	N (n = 171)	(%)
Sex	Male	16	9.36%
	Female	155	90.64%
Race	African American/Black	97	56.73%
	White	27	15.79%
	Other	5	2.92%
	Declined to answer	42	24.56%
Ethnicity	Non-Hispanic	112	65.50%
	Hispanic/Latin American	29	16.96%
	Declined	29	16.96%
Baseline BMI	30–35 kg/m ²	41	23.98%
	35–40 kg/m ²	47	27.49%
	> 40 kg/m ²	79	46.20%

TABLE 2 | Mean body composition at baseline, 6 and 12-months in program and medication compliant patients (n = 171).

Biometric	Baseline (n = 171)	6-Months (n = 171)	12-Months (n = 171)
Body weight (lb)	242.27	214.63 (−29.11 ± 12.40)	199.74 (−42.46 ± 18.18)
BMI (kg/m ²)	40.31	35.69 (−4.88 ± 2.00)	33.28 (−6.38 ± 2.96)
Body fat mass (lb)	116.68	95.25 (−22.67 ± 10.27)	82.65 (−34.11 ± 15.24)
Skeletal muscle mass (lb)	70.47	66.60 (−3.85 ± 3.22)	64.89 (−5.22 ± 3.84)
Visceral fat area (cm ²)	235.90	202.61 (−35.17 ± 29.62)	177.82 (−58.57 ± 38.29)

TABLE 3 | Mean change in body composition at 6 and 12 months in program- and medication-compliant patients (n = 171).

Biometric	6-Month (n = 171)	12-Month (n = 171)
TBWL (%)	12.25 ± 5.12	17.69 ± 6.67
TBWL as SMM (%)	12.63 ± 12.48	12.22 ± 8.73
TBWL as BFM (%)	79.68 ± 20.21	81.74 ± 12.45
TBWL ≥ 10%	60.23%	69.56%

3.3 | Changes in BMI Classification

At baseline, 46.2% of the patient population had Class 3 Obesity as defined by BMI ≥ 40 kg/m². At 12 months, the percentage of patients with Class 3 Obesity reduced to 11.7%. The proportion of patients classified as overweight increased from 2.3% at baseline to 28.7% at 12 months (Figure 1), reflecting a shift in BMI category over time.

3.4 | Body Composition Changes

The average percentage of total body weight loss was doubled (17.69% vs. 8.77%) in patients compliant with the program and medication, compared with noncompliant patients.

Additionally, non-compliant patients lost 14.99% of total body weight (TBWL) as skeletal muscle mass (SMM), while program and medication compliant patients lost 12.22% TBWL as SMM (Figure 2). Average total body weight loss was nearly doubled in patients compliant with program visits and medication (42.46 ± 18.18 lb) compared to noncompliant patients (23.22 ± 21.58 lb) at 12 months.

3.5 | Improvements in Chronic Disease Risk Factors

Table 4 presents the changes in chronic disease risk factors by 12 months ± 45 days to account for variance in patient schedules. Due to loss of follow-up, some patients did not have HbA1c

BMI Status at Baseline, 6 and 12-Months in Program-Compliant Patients

n=171

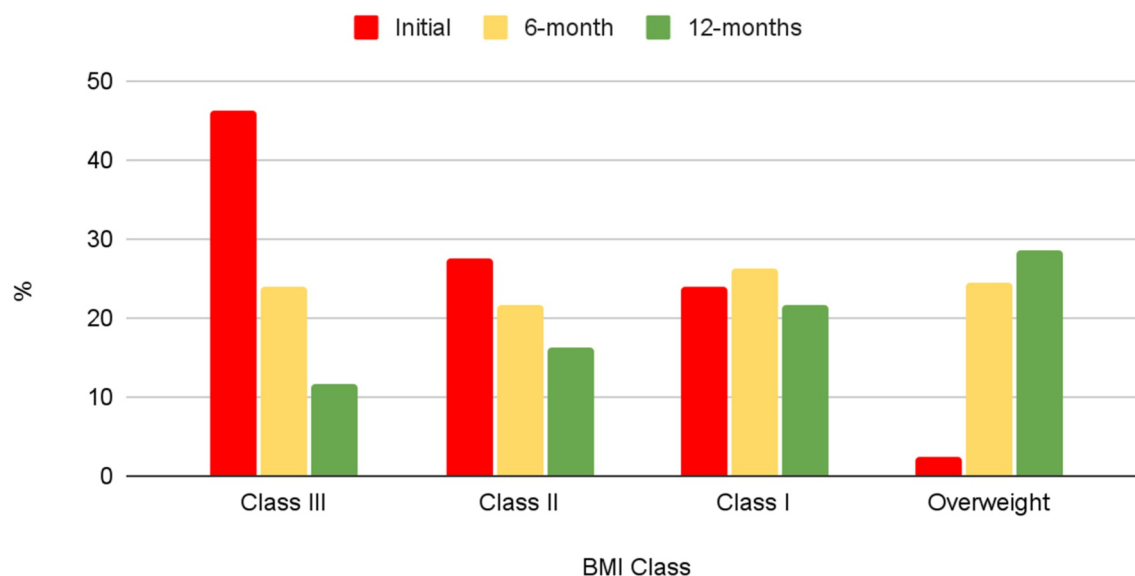


FIGURE 1 | Changes in obesity classification as defined by BMI at baseline, 6, and 12-months in program and medication compliant patients.

Percent of Total Body Weight Loss and % of TBWL as Skeletal Muscle Mass at 12-months by Program Compliance

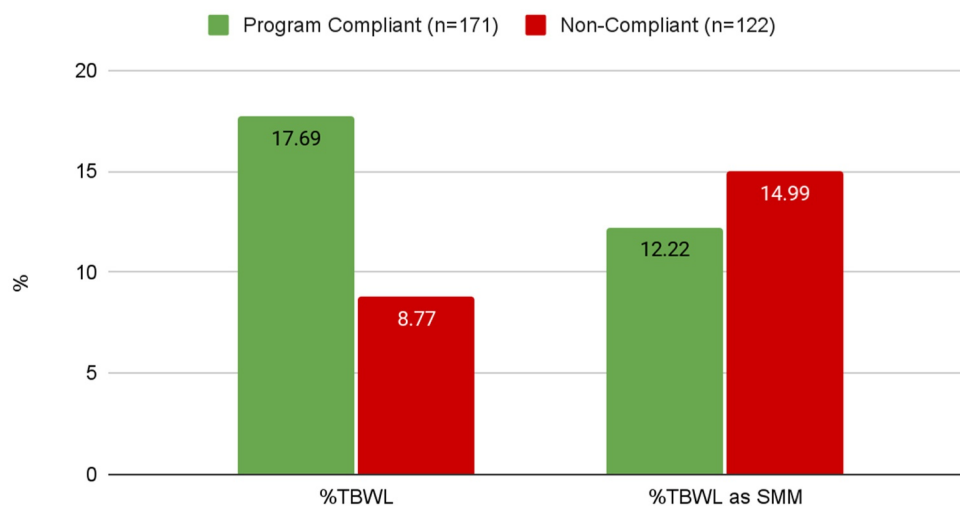


FIGURE 2 | Average %TBWL and %TBWL as skeletal muscle mass as 12-months in program and medication compliant patients versus non-compliant patients.

or blood lipid panel at the 12-month mark \pm 45 days. For these patients, 6-month values were used to calculate mean changes achieved by 12 months. To include a greater number of patients, the sub-group analyzed for chronic disease risk factors includes patients compliant with all program visits, including patients who had a medication pause of greater than 8 weeks ($n = 187$).

Statistically significant reductions ($p < 0.05$) were seen across the board for blood lipids (Total-C, LDL-C, Triglycerides, and ApoB) in patients starting with or without elevated levels. Additionally, statistically significant average reductions in

HbA1c were seen in patients with or without prediabetes at baseline.

3.6 | Normalization of Prediabetes

At the baseline, 57% of the included participants had hemoglobin A1c in the prediabetes category ($> 5.7\%$). By 6 months, 44.2% of patients reached normoglycemia, and by 12-month, 74.7% reached normoglycemia ($\text{HbA1c} < 5.7\%$) (Figure 3).

TABLE 4 | Average changes in chronic disease risk factors in 12-months in program-compliant patients (*n* = 187).

Parameter	Mean difference ± SD	<i>p</i> value	% Reduction
HbA1c % (baseline > 5.6%)	-0.54 ± 0.27	< 0.001	8.54% ± 4.4%
HbA1c % (all patients)	-0.45 ± 0.27	< 0.001	7.53% ± 4.57%
LDL-C (mg/dL) (baseline > 99 mg/dL)	-13.75 ± 21.51	< 0.001	9.53% ± 15.87%
LDL-C (mg/dL) (all patients)	-10.08 ± 21.46	< 0.001	6.74% ± 17.57%
Total-C (mg/dL) (baseline > 199 mg/dL)	-24.71 ± 23.31	< 0.001	9.53% ± 15.87%
Total-C (mg/dL) (all pts)	-15.35 ± 24.42	< 0.001	6.74% ± 17.57%
ApoB (mg/dL) (baseline > 90 mg/dL)	-14.24 ± 16.19	< 0.001	11.92% ± 12.57%
ApoB (all pts)	-9.68 ± 16.51	< 0.001	7.99% ± 14.49%
Triglycerides	-41.37 ± 63.06	< 0.001	21.33% ± 34.84%
Triglycerides (baseline > 150 mg/dL)	-102.84 ± 76.48	< 0.001	42.29% ± 27.61%

Percent of Patients with Prediabetes Reaching Normal Range at 6 and 12-Months

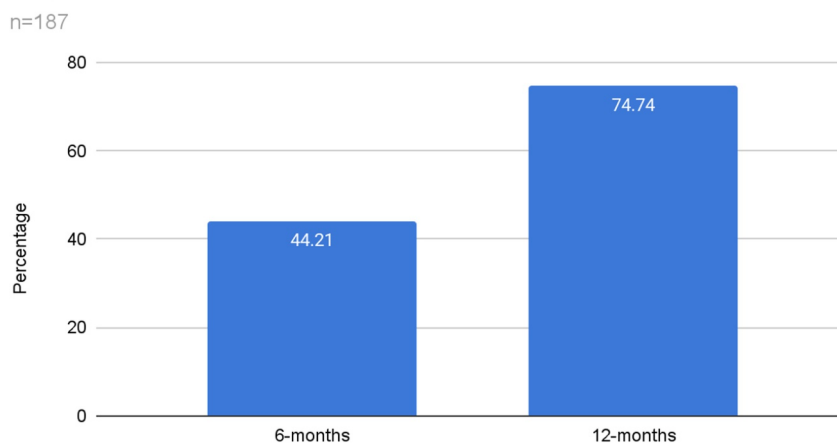


FIGURE 3 | Percentage of program-compliant patients with prediabetes at baseline with normalized HbA1c (< 5.7%) at 6 and 12-months (*n* = 187).

3.7 | Normalization of Chronic Disease Risk Factors

A significant proportion of program-compliant patients with initially elevated levels of the below chronic disease risk factors were able to completely normalize blood lipids including LDL, Total-C, ApoB, Triglycerides, and HbA1c by 12 months. Percentages of patients reaching normal ranges for each biomarker are depicted in Figure 4.

3.8 | Reduction in ApoB

The percentage of patients with elevated ApoB (> 90 mg/dL) at baseline was 60.4%. By 12-month, the percentage of program-compliant patients with elevated ApoB reduced to 39.6% (Figure 4).

3.9 | Improvements in Blood Pressure

Of program-compliant patients with Stage II Hypertension at the baseline, 77% reached a controlled blood pressure (< 120/< 80)

or decreased to Stage I Hypertension (< 140/< 90) by 12 months. By 12 months, the percentage of patients with Stage II Hypertension decreased from 28.34% to 12.83% (Table 5).

4 | Discussion

With the growing use of GLP-1 medications for obesity management, it is increasingly important to evaluate how structured lifestyle interventions integrate with pharmacotherapy to optimize clinical outcomes. The aim of this retrospective chart review is to evaluate the effectiveness of the TouchCare Method for optimizing clinical outcomes associated with weight loss, through the integration of structured dietary and lifestyle interventions, GLP-1 pharmacotherapy, and mobile health technology. The TouchCare Method utilized mobile technology to support monitoring, engagement and adherence. Effectiveness is defined as improvements in body composition with weight loss (%TBWL and % of TBWL as SMM) and reductions in obesity related cardiometabolic risk factors including: HgA1c, lipid levels (ApoB, LDL and total lipids) and blood pressure. This provides a framework for optimizing GLP-1 medications

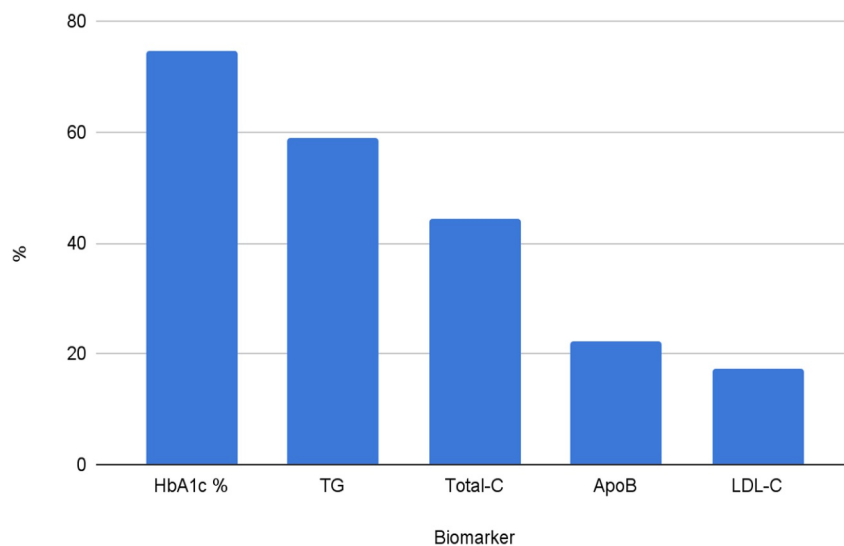


FIGURE 4 | Percentage of program-compliant patients ($n = 187$) with initial chronic disease risk factors reaching normal levels by 12-months.

TABLE 5 | Percentage of program-compliant patients in hypertension categories at the baseline and 6 and 12 months ($n = 187$).

Time point	Stage 2 (> 140/> 90)	Stage 1 (130–139/80–89)	Pre-HTN (120–129/< 80)	Controlled (< 120/< 80)
Baseline	28.34%	42.5%	6.95%	22.46%
6-Months	10.16%	40.64%	21.93%	19.25%
12-Months	12.83%	35.83%	10.70%	39.04%

for weight loss with nutrition counseling, structured exercise programs, and mobile health technology.

In this chart review, the patient population enrolled in the Bucks Health and Wellness Program represents a community significantly impacted by the chronic disease of obesity, which disproportionately impacts minority populations and populations of lower socioeconomic status [33]. Nationally, 57% of African American women have the chronic disease of obesity [34]. In our cohort, the majority of participants identified as women (90.64%), and 56.7% of our patients identified as African American. As reported by [census.gov](https://www.census.gov), the population of Milwaukee, Wisconsin consists of 38.6% black adults and 36.5% white adults, with 20.7% identifying as hispanic or latino. These demographic characteristics place this cohort within a population disproportionately affected by obesity and related comorbidities, providing an important opportunity to evaluate the effectiveness of the TouchCare Method in improving clinical outcomes and addressing disparities in obesity care. The use of mobile health technology provides a framework for scalable delivery, enabling broader implementation in the communities most impacted by obesity.

While weight loss alone can be beneficial, optimizing body composition by maintaining muscle mass during weight loss can support sustained weight loss and improved overall health. The TouchCare Method incorporates body composition monitoring and exercise programs to address the current gap in clinical practice and to help with patient education for long-term health. Reductions in muscle mass lead to reduced basal metabolic rate, decreased strength and longevity, and sarcopenia, which can negatively impact health after weight loss

[8–10, 12]. With the TouchCare Method, patients are given a progressive, evidence-based strength training program through mobile technology, making high-quality, personalized exercise guidance accessible at home. Each week, the program increases in intensity by increasing reps and sets, and recommending increases in cardiovascular activity intensity and length (ex. Walking progresses to jogging). This approach allows patients to establish the necessary habits to lose weight and maintain results from weight loss interventions with GLP-1 medication and medical nutrition therapy.

Data from this cohort suggest that the TouchCare Method improves body composition and reduces cardiometabolic risk factors. This method provides an innovative solution for risk-reduction with obesity treatment in underserved communities. The majority of patients (69.6%) achieved clinically significant weight loss of at least 10% of total body weight. Additionally, patients who were compliant with program visits and GLP-1 medication lost significantly more weight in 1 year than those who were not compliant with the program (42.46 ± 18.18 lb vs. 23.22 ± 21.58 lb), respectively, indicating that the TouchCare Method is effective for weight loss.

Patients following the TouchCare Method lost significantly less muscle mass compared to the averages reported in the SURMOUNT-1 trial of tirzepatide treatment, which ranged from 25% to 40% of total body weight loss [1, 5, 6]. Consistent with this, a narrative synthesis of clinical studies suggests that tirzepatide produces substantial weight loss alongside favorable cardiometabolic risk marker improvements in individuals with obesity, reinforcing its therapeutic value when embedded within comprehensive, lifestyle-supported obesity management

strategies [35–38]. In the 12 month (\pm 45 days) program, medication-compliant patients lost an average of 12.22% of total body weight as skeletal muscle mass, significantly less than that reported in previous trials. Patients with lower program adherence also demonstrated less muscle mass loss (14.99% of TBWL) than previous trials. Thus suggesting that monitoring skeletal muscle mass using bioelectrical impedance during GLP-1 RA therapy may provide meaningful feedback on patient progress and create opportunities to reinforce lifestyle modifications that support favorable body composition changes during weight loss.

Our secondary endpoint was reduction in cardiometabolic risk in our cohort. By 12 months, 74.7% of patients with prediabetes reached a normal HbA1c of $< 5.7\%$. Our risk reduction metric for atherosclerosis was ApoB as a more direct assessment of risk than total cholesterol. The percentage of program- and medication-compliant patients with elevated ApoB decreased significantly from 60.4% at the baseline to 39.6% by 12 months. Blood pressure also improved significantly, with 77% of patients with Stage 2 Hypertension at the baseline reaching a controlled blood pressure ($< 120/< 80$) or decreased to Stage I Hypertension ($< 140/< 90$) by 12 months. This real-world evidence demonstrates the effectiveness of the TouchCare Method for reducing individual cardiometabolic risk and significantly reducing the proportion of a population with weight related conditions.

Reductions in the proportion of individuals with high-risk comorbidities, such as Class 3 Obesity, Stage II Hypertension, Prediabetes, and hyperlipidemia, represent a powerful metric for communities, employers, or health systems seeking to lower the medical and economic burden of obesity. Healthcare costs for individuals with obesity are estimated to be more than twice those of individuals without obesity, with additional increases in workers' compensation claims, disability, and absenteeism [3, 39]. Costs also rise significantly with increasing class of obesity, with Class 3 Obesity accounting for a 233.6% increase in medical costs compared to adults with healthy body weight [40]. Therefore, reducing the proportion of individuals with class 3 obesity has the potential to lead to significant cost-savings in our communities and across health systems.

This research provides evaluative evidence of the effectiveness of a comprehensive lifestyle program to support patients on GLP-1 medication. By integrating medical nutrition therapy, progressive strength training, and mobile health technology for continuous self-monitoring, the Touch Care Method (TCM) provides an innovative and scalable framework for enhancing weight loss outcomes in communities disproportionately affected by obesity.

This analysis is subject to limitations based on the nature of the cohort as well as the study design. Limitations include attrition due to changes in health status such as pregnancy, changes in life factors such as relocation, and schedule conflicts with inability to complete the scheduled visits. Due to the nature of observational research, our initial cohort of patients in Bucks Health and Wellness had some variability in visit cadence, resulting in slight differences in individual patient timelines. Another limitation includes the retrospective study design and

lack of a control group. By restricting the analysis to patients who completed 12-month on the program with full adherence to program visits and medication, this introduces an adherence bias as these patients may have other unmeasured characteristics that make them more likely to succeed. Additionally, participation in the program was voluntary, creating a potential selection bias, which may make the results less representative of a broader population.

The use of bioelectrical impedance technology to estimate skeletal muscle mass may be less accurate than gold standard methods like DXA as it is impacted by hydration status, diuretics, time of day, and recent exercise. Patients were reminded to hydrate with at least 64 oz of water daily to reduce this impact.

In sum, these factors may limit the external validity of the results. Future research is needed to establish causal relationships and to further evaluate the impact of incorporating the TouchCare Method on improvements in body composition and cardiometabolic outcomes.

5 | Conclusion

In summary, the TouchCare Method may improve outcomes on GLP-1 medication by supporting clinically significant weight loss ($\geq 10\%$ of total body weight), preserving skeletal muscle mass, and may normalize or reduce associated cardiometabolic risk factors such as: prediabetes, hyperlipidemia, and hypertension. This method provides a comprehensive framework for integrating diet and lifestyle interventions through mobile technology to support patients on GLP-1 medications. By combining medication with structured behavioral guidance, this approach may improve weight loss outcomes and cardiometabolic health, while offering a scalable model for broader implementation in communities disproportionately affected by obesity and its related conditions.

Author Contributions

Dr. Elizabeth Sharp Edens led the design of the intervention program (the TouchCare Method), contributed to the drafting and revision of the manuscript, and provided final review and approval. Heather Falise contributed to study design, development of the statistical analysis plan, literature review and contributed to manuscript review. Elle Bernardo contributed to study design, development and implementation of the nutrition intervention, and manuscript review. All authors contributed to the article and approved the submitted version.

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role in the study design, data collection, analysis, interpretation of the data, or preparation of the manuscript.

Conflicts of Interest

Dr. Elizabeth Sharp Edens is the founder of Bucks Health and Wellness and TouchCare Method, which are described in this study. The authors report no other conflicts of interest.

Data Availability Statement

The data underlying this study are not publicly available due to patient privacy and confidentiality considerations.

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