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DIGITAL TECHNOLOGIES FOR ADULT OBESITY TREATMENT IN THE GLP-1 ERA: A STRUCTURED REVIEW OF EFFECTIVENESS, ADHERENCE, EQUITY, AND HEALTH-SYSTEM INTEGRATION

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ABSTRACT

Obesity requires long-term support and treatment by multiple healthcare professionals. The disease is also becoming more prevalent in an era of digital models for delivering health-care services, organizing services and promoting health equity. This article presents an evaluation of recently published studies pertaining to the use of digital technologies in treating adult obesity regarding clinical outcomes, patients' ability to adhere to their care plan and become engaged in their own healthcare, increased availability of obesity services, reduction of health disparities and whether or how such technologies can be effectively incorporated within currently operating health systems during the GLP-1 era. The primary database searched was PubMed, although NICE guidance for clinical practice was also referenced as well as a backward citation search. The research focused on adult clinical guidelines, systematic reviews, meta-analyses, pragmatic trials, high-quality real-world data from adults with BMI that is classified as obese or overweight. There are several telehealth, health apps, wearable devices, home based remote monitoring, hybrid delivery methods to support obesity treatments. However, the effectiveness for each type of intervention varies depending on how the intervention was designed, how long participants were followed continuously, and how engaged participants remained throughout the entire time.

KEYWORDS

Obesity; Digital Health; Telemedicine; GLP-1 Receptor Agonists; Health Systems

CITATION

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1. Introduction

Obesity management must involve more than just general advice to change lifestyle. In modern clinical practice effective treatment for obesity will require an integrated model that incorporates nutrition therapy; physical activity/exercise; behavior change strategies; pharmacotherapeutics; metabolic/bariatric surgery when appropriate (Elmaleh-Sachs et al., 2023).

Beginning with the challenge of creating a sustainable plan for patients who have experienced significant weight loss, the chronic care model (CCM) has been shown to create additional, practical challenges. For example, sustained weight loss typically requires multiple follow-ups, continued reinforcement of the patient's ability to self-monitor their eating habits and activity levels, adjustments made to the therapeutic plan based on the patient's progress and identification and/or mitigation of social barriers that may be preventing the patient from maintaining or continuing weight loss. Due to the fact that traditional in-office care does not currently offer an adequate solution to meeting these demands due to several factors such as; access to specialized obesity service providers is limited, office visits take a considerable amount of time, there are limited healthcare work force members available to provide this type of care, and high rates of attrition continue to occur among those enrolled in even the most well designed weight loss programs, there is increasing interest in utilizing digital health technologies as a means of extending the reach and continuation of obesity care while at the same time not eliminating the physician-patient relationship.

Digital health in obesity treatment encompasses an extremely wide range of interventions including but certainly not limited to; telemedicine, apps on smartphones, web-based programs, remote monitoring, wearables, DTx (digital therapeutics), Automated Coaching, Multidisciplinary Care supported by Apps, Electronic Clinical Decision Support Systems. The primary role of these tools is to provide behavioral content, to aid in self-monitoring, to create points of contact between clinic visits, to allow for Medication Monitoring, to remind patients and provide patient feedback, to enhance the Scalability of Care. Recent NICE Guidance has specifically identified digital technologies as a method to deliver multidisciplinary Weight Management Services to Adults, and it was noted that some technologies could be used to support prescribing and monitoring weight management medications within Structured Services (NICE, 2024; NICE, 2025).

There is an even greater need for digital care as there has been an explosion of new drugs (high potency GLP-1's, dual GIP/GLP-1's etc.) being developed which are significantly increasing the expectations regarding pharmacological weight loss. However, these have placed greater emphasis on issues such as long term follow up, persistent treatment, management of adverse effects, nutrition advice and availability. WHO guidelines provide similar emphasis by stating that obesity is a chronic relapsing condition which requires ongoing life-long care. They recommend that the use of GLP-1 therapies should be as part of a comprehensive integrated person-centered approach to obesity management and not simply as a solitary therapy. (Celletti et al., 2026). Digital tools will therefore be most beneficial when viewed from the perspective of supporting the development of the necessary systems required to support continuous delivery of conventional obesity care over the long term.

At the same time, there is no consensus regarding whether the literature on digital obesity care is uniformly positive. Between 2024-2026, systematic reviews and meta-analyses have identified both signals of a potential benefit as well as marked heterogeneity. In some analyses (telemedicine, app-based interventions, multi-component digital programs), digital obesity treatments have been associated with improvements in body weight, BMI, waist circumference, or diet related measures; while in other analyses, combined treatment effects were generally weak to modest, either statistically insignificant or clinically irrelevant. Additionally, research has shown that digital obesity treatments appear to be more successful when they provide more regular interaction with humans, or explicitly structure behavior compared to simple stand-alone apps which may result in weaker and less durable results (Metzendorf et al., 2024; Chiavarini et al., 2025; Pujia et al., 2025). This indicates that “digital obesity treatment” should not be treated as one uniform intervention class.

There is a third major issue that remains unaddressed — the issue of patient engagement and retention. The long-term effectiveness of all obesity treatments relies on sustained, active participation by obese individuals; as such, it also does with respect to digitally delivered health behaviors interventions. High dropout rates have been an enduring obstacle to successful implementation of digital behavioral change interventions, and in the GLP-1 era, the clinical importance of this problem has increased substantially due to evidence suggesting high rates of discontinuation in routine clinical practice. For digital interventions to have meaningful contributions to the field of obesity medicine, these digital tools should be able to both start treatment and maintain ongoing participation and reinforcement of expectations and facilitate obese individuals navigating side effects and cost issues and treatment fatigue.

The idea that digital technology will provide access to better services by eliminating distance, waiting time and reliance on limited space in physical clinics, is largely correct; however, while it provides greater reach, it does not necessarily mean that there will be greater equity in this area. What determines if an individual will have equitable access to digital obesity services includes their level of digital literacy, language barriers, cost of devices and internet access, ease of use of apps, health literacy, insurance coverage and the cost associated with purchasing medications related to pharmacotherapy. In assessing the value of digital obesity care both from a social science and health systems' perspective, the value of digital obesity care should not only be based on how much weight individuals lose. Rather than simply examining weight loss, digital obesity care should be evaluated in relation to service availability, continuity of care (as opposed to episodic), required digital literacy skills, cost, the burden of implementation and whether the service increases or reduces health inequities.

The key question is how these tools can be integrated with our current multidisciplinary approaches for the improvement of clinical outcomes, support for patient adherence, increased availability/accessibility, and equitable distribution within the new paradigm of modern anti-obesity medications.

This review aimed to identify the evidence for digital technologies' use in treating adults who are obese by evaluating the literature from 2022 through 2026 to assess the technology's influence on clinical effectiveness; patient engagement/adherence; access to care; and health equity/health system integration (with a focus on GIP/GLP-1 based treatments).

2. Methodology

This article used a clear, transparent and reproducible methodology based upon a prioritized evidence-based process to create a structured narrative evaluation. Since the very recent scientific literature relating to the use of digital technology in treating adult obesity contains substantial variability (in terms of intervention type; study design; outcomes measured; setting or environment where the implementation occurred; and degree of health system analysis) a structured narrative review approach was chosen. The articles reviewed were part of a broad range of research types including clinical practice guidelines; systematic reviews and meta-analyses; randomized controlled trials; pragmatic trials; observational studies; research focused on implementing interventions and studies assessing equity in health care. For reasons other than just effectiveness (efficacy), the questions addressed in this review related to how likely individuals are to adhere to recommended treatments; how accessible those treatments may be; how successfully they can be implemented within existing systems of health care; and whether there exist any inequities in who receives benefits from these programs. Therefore, it would have been inappropriate to perform a pooled quantitative synthesis of all sources of evidence.

In this project, as well as using PubMed to identify existing literature related to biomedical databases and a systematic review of current best practice in the delivery of digital weight loss services to individuals with obesity/overweight conditions, references to relevant NICE Guidance have been included. For the purposes of this project, all publications made available after 01 January 2022 and up until 27 March 2026 were eligible. A pre-existing reusable PubMed search strategy which identified research into obesity, digital health and treatments for obesity utilized combinations of keywords in multiple ways (for example): ((obesity OR overweight) AND ("digital health" OR telemedicine OR telehealth OR mHealth OR eHealth OR "mobile application*" OR "digital therapeutic*" OR wearable* OR "remote monitoring" OR "hybrid care") AND (adult* OR adults) AND (treatment OR management)) OR ((obesity OR overweight) AND (semaglutide OR tirzepatide OR GLP-1 OR GIP/GLP-1) AND (digital OR telemedicine OR app* OR remote)). Furthermore, backward citation searches for high-value reviews or significant clinical guidelines were conducted to add additional evidence-based reference sources.

The following are eligible for inclusion; those that have examined adults who are obese or overweight (BMI ≥25), and those that are high value review articles, practice guidelines, consensus statements and/or articles focused on implementing digital health technologies to manage adult obesity. Those studies were further weighted if they included data on the following domains: body weight, BMI, waist circumferences, body composition, physical activity/behavioral/lifestyle related measures, adherence/persistence, engagement with technology, access to care, implementation in a multidisciplinary setting, medication monitoring or equity/outcome issues. Excluded from this synthesis would be all study and publications that focus solely on pediatric obesity, pregnant women or other non-obesity related conditions unless there was an obvious connection to managing adult obesity.

All potentially relevant articles were reviewed for inclusion using a combination of title/abstract screening, followed by a review of full article content when additional information was needed to determine suitability for a thematic analysis. For those articles where there was duplicate or overlapping data regarding similar research questions, we identified the highest quality study (i.e., based on design, clinical relevance and timeliness) as the primary source of data for our synthesis. Those sources that represented current recommendations, systematic reviews/meta-analysis, RCTs and high-quality observational studies were given the greatest weight during the synthesis. As a structured-narrative review and not an independent systematic review, we did not perform a risk assessment across all included articles; however, we used a hierarchy of importance with respect to article selection including: quality of methodology used in each article, how well each article answered the specific review question, how recent the data was from each reference and how applicable the findings from each article were to adult obesity management.

The last synthesis of this study is organized around themes to include telemedicine; mHealth apps and digital behavior modification; wearables and remote surveillance; hybrids of both medical and non-medical care for patients with obesity treated with GLP-1 analogs (e.g., semaglutide); mHealth-based support for maintaining adherence and engagement in the use of GLP-1 analogs for obesity treatment; barriers to access due to a digital divide and inequities in health status; methods for implementing mHealth programs at scale within the existing health system infrastructure; and the patient-reported clinical endpoints that extend beyond weight loss. Table 1 shows review framework and evidence prioritization used in the present review.

Table 1. Review framework and evidence prioritization used in the present review.

Domain	Evidence prioritized	Illustrative outcomes / questions	Reason for inclusion
Clinical effectiveness	Guidelines, systematic reviews and meta-analyses, randomized trials, pragmatic trials	Weight, BMI, waist circumference, body composition, diet quality	To determine whether digital tools improve adult obesity treatment
Adherence and persistence	Pragmatic trials, real-world studies, pharmacoepidemiologic analyses	Engagement, attrition, treatment continuation, medication persistence	Because obesity and GLP-1-based care require sustained participation over time
Access and equity	Equity-focused reviews, minority-population studies, policy and guidance documents	Digital literacy, language, cost, connectivity, service reach, digital divide	To align the review with health equity and the journal's social-science relevance
Implementation and hybrid care	Scoping reviews, EHR/health-system studies, service-delivery models	Workflow integration, multidisciplinary follow-up, continuity of care	To assess whether digital interventions fit real clinical pathways and health systems

3. Results

3.1. Telemedicine in Obesity Treatment

Telemedicine is becoming increasingly relevant as a viable digital strategy for providing obesity care through allowing providers to reach out to their clients from anywhere and by enabling follow-ups to be made in a timely manner. Obesity services are utilizing telemedicine (video conferencing) in the form of virtual meetings via phone or computer, videoconferencing, e-mail communication, follow-up by weight-management counselors via computer/video/phone, health coach support via apps/websites, and remote analysis of patient's self-monitoring activity logs.

The environment of policy is increasingly supporting this strategy. Both the obesity management guideline from NICE and its early-value-assessment support that selected types of digital technology can provide multidisciplinary weight-management services for adult populations, with some potential as a prescribing/monitoring platform for weight-management medications (NICE, 2024; NICE, 2025). Together, both guidelines frame obesity-related care provided by using telemedicine within formal service delivery structures, not just as part of consumer-oriented digital health/wellness products.

Recent studies have demonstrated telemedicine may be associated with clinically meaningful outcomes, provided that the intensity and duration of interventions are appropriate. In addition, a systematic review and meta-analysis examined obesity treatment options for US adults ≥40years old and included 16 randomized controlled trials examining the effectiveness of telemedicine-based interventions for managing obesity. The review found statistically significant advantages for individuals using telemedicine for weight loss compared to those who did not use telemedicine. In addition, the strongest effect sizes were observed for programs which lasted at least 6-12months. (Adebile et al., 2025). Therefore, these findings indicate that telemedicine will likely be most beneficial when it provides continuous care models rather than providing intermittent or acute in person consultation opportunities.

It is possible for telephone and/or video-based services to have positive effects depending on if they are part of structured systems where patients know what they're working towards (goals), have multiple contacts with professionals, there's an element of accountability, and the patient has something reinforcing them to continue changing their behavior.

A recent meta-analysis using a systematic approach of remote (tele)healthcare nursing led interventions found a pooled difference of 2.59 kilograms in body mass; 1.05 kilograms/meter squared in BMI and 2.52 centimeters in abdominal circumference as opposed to face-to-face consultations (Colaone et al., 2025). It has been noted that while there were few studies included within this review the results indicate an effectiveness for tele-consultation-based obesity management regardless of whether it is physician centered or not. There appears to be value to the use of remote healthcare by non-specialist registered nurses/ allied health professionals if large-scale obesity treatment is needed but specialist physicians' time is limited.

The literature surrounding telemedicine includes heterogeneity about inclusion/exclusion criteria for participants (e.g., BMI), severity of obesity, professional staffing models, and the behaviorally focused content delivered through telemedicine. As such, some studies have examined whether telemedicine can replace face-to-face interactions with healthcare providers while other studies have explored whether telemedicine can serve as a supplement/layering option on top of the standard care options provided. Additionally, follow-up time frames for many of these studies have been relatively short given the chronic nature of obesity. Therefore, the most likely conclusion from the current body of evidence suggests that telemedicine is both a viable and effective way to provide access to obesity treatment programs; however, the impact of telemedicine is dependent upon the quality, organization and consistency of the program in which it is embedded.

3.2. Mobile Applications and Digital Behavioral Interventions

Some apps can functionally represent only an electronic version of manual self-monitoring. Other apps will serve as the user interface for several evidence-based behavior interventions. The differences here may be critical, since there is increasing support in the literature that not all apps should be considered equivalent interventions.

A 2025 systematic review and meta-analysis by Pujia et al., found that mobile phone apps have shown a moderate to small (but statistically) significant impact on weight loss and reduction in body mass index, when followed for about four to six months; however it has been demonstrated that the effects of mobile apps are likely to be short-lived beyond this point and that the potential benefits of these applications could be diminished through subsequent weight regain and dropout.

This clinical pattern is also reasonable as the apps provide a low barrier to entry to initiate self-tracking and produce an initial perception of movement towards success; however, it is likely that continued use of the app would need to continue to meet users' needs for relevance, personalized support and reinforcement. A Cochrane Review conducted in 2024 on the use of smartphones to help adolescents and adults who are overweight/obese found that there was little evidence suggesting an overall advantage using apps over using no or less than one coaching session/personalized coaching; also found that most of the small improvements noted were very minor/nothing clinically meaningful (Metzendorf et al., 2024). Chiavarini et al. found that mHealth & eHealth interventions resulted in betterment in waist circumference. However, the "pooled" data (results combined) regarding weight loss and changes in behaviors showed that the results were not consistent and had great variability (Chiavarini et al., 2025). Therefore, these studies indicate that it is inaccurate to say, “Apps Work” or “Apps Do Not Work”. Instead, apps for treating obesity may represent a continuum ranging from simple tracking apps to full digital behavior-change programs.

An alternative way of considering the differences in outcomes from these studies could be to focus on the individual elements (components) within interventions instead of just how they are delivered. When examining components of digital interventions across several RCTs, Nunns et al. found that there were no digital intervention components that worked on their own for weight loss. The best combination identified by the authors was Information/Education; Specialist Contact; Incentives/Rewards which had some evidence of clinically significant weight loss effects at 6 months (Nunns et al., 2025). This finding is highly relevant for obesity medicine because it reframes effectiveness as a property of intervention design rather than platform type.

The same theme is expressed by a 2025 meta-analysis of mobile app-based interventions designed to improve behavioral, metabolic and weight-related outcomes. A few significant improvements were identified for participants including reductions in body weight, BMI (Body Mass Index), waist circumference, fat mass, diastolic blood pressure and HbA1C. Further, Li et al. stated that common among these successful interventions were behavior change strategies including self-monitoring, providing instructions to users, providing user-specific feedback, helping users set goals and assisting users in developing an action plan (Li et al., 2025). Their subgroup analyses suggest that combining diet with physical activity interventions/programs and/or those employing 8 or more of the identified behavior change techniques may have merit. In a practical sense, it is unlikely that the best obesity tracking apps will be just passive trackers. The best obesity apps are more likely to be an active component of a larger "behavioral ecosystem".

A 2025 umbrella review by Couto and Almeida provides additional support to these interpretations. The review reported on the results from studies using mobile apps as well as long term eHealth interventions; both types were associated with a small but statistically significant loss of body weight, loss of BMI (body mass index), and loss of waist circumferences. However, the results from studies using web-based interventions remain unclear (Couto & Almeida, 2025).

The DEMETRA randomized clinical trial studied an eight-component digital therapeutic that included a personalized dietary plan (for all), an exercise program tailored to the individual (all) as well as behavioral/psycho-social support through the phone/web application (some). As with other studies using digital therapeutics, there was no significant difference in total weight loss when comparing adherence to the active treatment versus adherence to the placebo version. However, among users that were fully compliant (i.e. completed 100% of the recommended activities for the duration of the study) with their assigned version, users that used the active version of the app lost substantially more weight than users that used the placebo version (Bertoli et al., 2025). As such, this is a particularly relevant finding because it indicates that while differences were found based on whether the participant used the app, the differences are much clearer with regards to how often they engaged with the app.

Palacios et al. found that a commercial behavioral digital program for nutrition led to better diet quality and greater weight loss than the standard guidance provided by nutritionists to a representative U.S. population of adults who were obese or overweight (Palacios et al., 2025). Aukan et al. also found that a digital therapy used in a community-based practice improved waist circumference, reward related eating behaviors and quality of life at 12 weeks; however, there was no significant difference in body weight among participants (Aukan et al., 2025). In other words, these studies show that while weight loss may be small, treatment can have many positive impacts on individuals beyond their body mass.

A 2025 pragmatic RCT involving adults with prediabetes and also overweight/obese found that referral to an automated AI-powered Diabetes Prevention Program (delivered via a smart phone app and connected

scale) was non-inferior to referral to a remotely-coached human led Diabetes Prevention Program for all three components of a composite endpoint: weight loss, physical activity and HbA1c (Mathioudakis et al., 2025).

Taken together, the available research indicates that mobile and digital behavioral interventions can support weight loss in individuals with obesity, however, the level of success is heavily dependent upon how well these types of interventions were designed to be used by patients for an adequate period (intensity) and by which they were engaged.

3.3. Wearables and Remote Monitoring

Wearables and remote monitoring systems are being used in increasing numbers to serve as the basis for a patient's personal obesity management "infrastructure." The functions of these devices include but are certainly not limited to; tracking number of steps taken, recording activity levels, integrating with scales (smart scales) for weight measurements, tracking of eating habits or sleep patterns, and/or providing both real time and asynchronous feedback mechanisms for patient and clinician use.

Researchers are saying that while there may be a small direct impact from using wearable technology on an individual's health status, they can still have a large positive impact when combined with other programs or strategies to support the individual. Chiavarini et al. also noted that self-monitoring type interventions (i.e., those that allowed individuals to track their progress) appeared to provide greater changes in body measurements compared to less interactive types of interventions (Chiavarini et al., 2025). Additionally, Motevalli et al. concluded that digitally based exercise programs which followed established guidelines resulted in decreases in body fat and BMI and improved waist measurement and percent body fat at follow-up, however the degree by which such programs performed better than "traditional" programs could not always be determined for all outcome measures (Motevalli et al., 2025).

From an individual behavioral standpoint, wearables are important in that they translate abstract recommendations for treatment of obesity (i.e., "be more active") to be able to implement them daily.

Wearables aren’t just going to create long-term changes for people by simply being there. The mere existence of a wearable sensor doesn't mean you will have sustained interest; data overload, alert fatigue, decreasing novelty, and the failure to integrate with clinical reviews (i.e., how the patient's information is used) can also lower its use. Therefore, the best way to interpret this body of literature is that wearable devices are helpful if they are an integrated part of your patient’s treatment plan: they may be able to provide the person some tools to help them develop self-regulatory skills, however, wearable technology has never been designed to replace motivation, counseling, or individualized care planning.

3.4. Hybrid Care Models

Hybrid care is a combination of the in person (face-to-face) and online (digital components). For example, when managing an obese patient via hybrid care, there will be in person assessments and/or diagnoses, milestone review appointments, followed by post-visit telecoaching, as well as remote monitoring using an app, along with asynchronous communication between in-office visits. This form of hybrid care is conceptually appealing, since it can provide the same accountability and professional clinical interaction as traditional care while allowing for greater convenience and scalability using technology.

The 2024 scoping review conducted by Cheah et al., reported that hybrid Interventions demonstrated a positive effect in terms of body weight, BMI, waist circumference, and physical activity when compared to other studies as well as other types of interventions, using controlled trial design; as such, the range of weight lost was from 3.9 to 8.2 kilograms; while there is some evidence suggesting a minimum 5% weight loss from baseline (Cheah et al., 2024). Hybrid interventions can have many formats (e.g. a combination of in-person appointments and telephone based contact; in-person appointments and text messaging; in person appointments and email based contact; etc.) but regardless of format, the overall direction of the evidence indicates that hybrid care may represent one of the most practical models for long-term management of obesity.

While hybrid models may not automatically be superior, they are only as good as how well designed they were. Which encounters should remain in person? And how can digital data be used to support clinical decision making? Poorly designed hybrid services have the potential to become fragmented with patients receiving duplicated advice, inconsistent messaging or unclear accountability. Therefore, future research should examine not just whether weight loss is achievable using hybrid care, but also identify which hybrid configurations would be acceptable, cost effective, and feasible within real health systems.

3.5. Digital Support in GLP-1-Era Obesity Treatment

The introduction of semaglutide and tirzepatide to treat obesity will reshape what we believe pharmacological treatment for obesity will look like. For these new drugs to work in a real-world setting as they do in trials, there needs to be much more than just a prescription. Factors such as dose increase, managing potential side effects, nutritional recommendations, physical activity recommendations, tracking of the patients' weight loss, and follow-up with the physician or other health-care providers, are critical for achieving trial-like outcomes in real-world care by those who receive the drug through their primary healthcare provider.

NICE's early value assessments are applicable as they recognize many of the new digital weight management technologies have the capability to provide both multi-disciplinary lifestyle support AND prescription and monitoring of weight management medicines (NICE, 2024). As such there has been a shift in how obesity services are designed; with digital health platforms having the ability to function as an infrastructure for medication supported chronic disease care instead of simply providing supplementary lifestyle support.

Real-world data validate the feasibility of this model. Richards et al. studied a remote twelve-month weight management program that used either Semaglutide or Tirzepatide and included behavioral support through an app; access to registered dietitian/nutritionist coaches; monthly monitoring by the participants' clinicians; and overall clinical oversight. Both groups showed significant average weight reduction over time, however, those who received Tirzepatide had larger average losses compared to those receiving Semaglutide. Also, although both groups demonstrated large numbers of patients that met the "clinically meaningful" thresholds for 10% and 15% loss, the Tirzepatide cohort had higher percentages meet these two thresholds (Richards et al., 2025). This study is valuable as well as being commercial and retrospective due to demonstrating what digitally enabled multi-disciplinary pharmacologic intervention would be like in real world application.

Engagement has been another area where there is an additional body of research. Johnson et al. reviewed participation data for nearly 58,000 adult subjects who were being treated with either semaglutide or tirzepatide through digital weight management programs. The researchers noted that the individuals who participated in these programs achieved greater amounts of weight loss than those who did not participate at all measured points in time (Johnson et al., 2025). The difference was even more pronounced at the third month, when participants in the program showed a wider margin of weight loss. By the fifth month, the differences still represented significant clinical advantages. These findings suggest that digital delivery systems (as opposed to delivery systems such as pill bottles) are important for maintaining the behaviors and treatment regimens which support the effectiveness of GLP-1 medications.

Ard et al. made a similar point when they said, that "lifestyle interventions have a place in the GLP-1 age," and that "they are not being replaced by our enthusiasm for pharmacology" (Ard et al., 2024). Similarly, WHO has recommended long term GLP-1 therapy in combination with intensive behavioral therapy. (Celletti et al., 2026). Mozaffarian et al. made several suggestions for how to manage patient nutrition while patients are undergoing treatment with GLP-1 receptor agonists. The primary focus is on how to deal with gastrointestinal side effects that result from medication use, as well as avoiding deficiencies in essential nutrients, maintaining muscle mass and bone density, and giving registered dietitians who work with them access to digital tools such as telehealth and digital technologies to assist with their practice and provide an opportunity to educate others using those same digital tools (Mozaffarian et al., 2025). All the references above support one common theme: It can't ever simply be about prescribing medications. It will always have to be a digitally enabled multidisciplinary approach to managing chronic diseases.

Digital tools enable users to log their weights frequently and send themselves reminders about taking medications. Digital tools also create an opportunity for users to monitor symptoms and manage early signs of side effects (nausea/vomiting/constipation/dietary intolerance). Digital tools enable users to ensure adequate calories/protein intake as appetite will be significantly impacted. Digital tools provide continued coaching on patient's expectations; plateau and chronicity of obesity treatment. Finally, digital tools may serve as a pathway for patients that reside a distance from specialty services, or those that cannot afford to travel back and forth to office appointments.

The evidence base also has many serious limitations. For example, many major GLP-1-plus-digital trials have been done as single-service level (retrospective) analyses that were developed inside private systems and some have been conducted by company affiliated researchers using a platform linked dataset. As such they represent increased risks for both selection biases and selective reporting of outcomes as well as limited generalization of results to public systems, low resource areas and non-subscription-based patient populations. Long term comparative randomized studies need to be independently replicated.

3.6. Adherence and Engagement

Whether an obese patient is going to follow through with a treatment plan - for example, a new pill or a mobile app - in real life depends entirely upon how well he or she follows the treatment and works with his/her healthcare providers. This is true whether we use new medications like GLP-1 receptor agonist (for example, semaglutide), which may have adverse reactions that could make them unbearable for some patients, or older medications. The results from the studies are based on the experience of study participants while under close observation by researchers. However, once participants leave the study, numerous factors influence how successful they will be in losing weight and maintaining weight loss; this includes frequency of visits to their physician for follow up, ability to manage side effects related to the medication, and degree of activity devoted to changing unhealthy behaviors into healthy ones.

The research on digital interventions supports the same idea. Nunns et al. reported in their findings that when combinations of education, specialist consultation, and incentives were used together for programs, they were better at promoting engagement compared with using them individually. This implies that how an individual engages in a program depends on its design (Nunns et al., 2025). Bertoli et al. found that in the DEMETRA trial, the degree to which participants followed the guidelines of the mobile-app based intervention had a direct relationship with the amount of weight loss achieved, even though there was no statistically significant difference in weight loss among groups (Bertoli et al., 2025).

Gleason et al. found that the commercial insurance eligible non-diabetic adult population had just 32.3% persistency at one-year post initiation of GLP-1 (agonist) therapy to treat obesity; yet it is widely known that these treatments have high levels of efficacy in clinical trial setting (Gleason et al., 2024). Rodriguez et al. examined discontinuation of dual labeled GLP-1 receptor agonist use in a cohort of 125,474 adults who were obese or overweight. They found that most patients stopped using their prescribed dual labeled GLP-1 receptor agonists within one year (Rodriguez et al., 2025). Additionally, they demonstrated that discontinuation rates are significantly greater in those individuals without Type 2 Diabetes compared to those with Type 2 Diabetes.

Thomsen et al. made the exact same point when discussing how much less effective GLP-1RA-based therapies performed in real world practice compared with clinical trials overall, however these treatments can produce similar results to those seen in clinical trials if the patient is highly compliant (Thomsen et al., 2025). Therefore, compliance is NOT an artifact or nuisance variable and is instead one of the primary explanations for why many obese patients fail to achieve optimal real world weight loss outcomes.

The issue is not just about continuous use but also treatment discontinuation. Participants gained back about two thirds of their lost weight in the year after they stopped using semaglutide in the STEP 1 extension. Cardiometabolic benefits for those participants were returning to near-baseline levels (Wilding et al., 2022). In contrast, STEP 5 found that continuing semaglutide can help patients maintain significant weight loss during a period of 104 weeks (Garvey et al., 2022). These results support the chronic disease model approach for obesity care; as such, digital strategies should focus on sustaining (or maintaining) rather than initiating.

Firstly, digital tools could assist in normalizing the concept of weight management (obesity) treatment as an on-going process and not simply a "course" with a specific end date. Secondly, digital tools can aid patients in managing what are likely to be common barriers to treatment including side effects; reaching a plateau; and/or becoming frustrated. Thirdly, digital health tools can provide continuous low intensity support which can be challenging to achieve through face-to-face care alone. Fourthly, digital analytics will enable practitioners to recognize early indicators of disengagement from care and develop strategies to intervene prior to complete loss of contact. For obesity medicine one of the potentially most impactful applications of digital health may therefore be to transform episodic treatment into continued support.

3.7. Access, Digital Divide, and Health Equity

Access is one of the strongest arguments in support of Digital obesity care based on theory. Digital services have the potential to reduce travel burdens for patients, enhance flexibility with scheduling and follow-up, extend specialist support into settings where there are limited expertise to provide obesity care, and improve access to these services by health systems experiencing rising obesity prevalence and limited workforce capacity.

While digital reach does not equal digital access for all, several other factors limit the potential for digital obesity services to deliver on an "equitable" platform. Some of these limiting factors are low digital literacy levels; lack of adequate broadband Internet; language limitations; a lack of comfort with using mobile applications; usability issues related to disabilities; stigmatizing perceptions about weight loss; and

unaffordable costs associated with new technologies such as smartphones and tablets that will enable some form of digital follow-up after discharge.

The evidence on the equity of digital care for obesity is also very limited. Hassan et al. found just nine randomized controlled studies evaluating the effect of digital health interventions on body weight and diet (the two main areas of interest) among Culturally and Linguistically Diverse or Indigenous peoples. Most of these were from the U.S., and only one study included Indigenous people (Hassan et al., 2026). While many studies had good participant retention rates, few were over 50% in terms of adherence, and overall, the authors conclude there is a lack of evidence for both the effectiveness and generalizability to other groups than those studied.

A related systematic review conducted by Silva et al. assessed how digital interventions and primary care accessibility were perceived among minorities. The authors found that when digital interventions are incorporated into an inter-professional practice model, they can increase both patient's ability to gain access to healthcare services as well as enhance the quality of their clinical care; however, there were still many significant barriers related to both digital and health literacy (Silva et al., 2025).

Private entities can act with speed as they develop commercial programs, however; this could lead to a dual tiered system where individuals with means can gain faster access to digitally enhanced multidisciplinary obesity treatment. The World Health Organization has developed specific guidelines on GLP-1 therapies, which emphasize that the "implementation depends upon equitable access, readiness of health systems, affordability, and nondiscriminatory patient centered care (Celletti et al., 2026).

Examples of such pro-actively include providing both multilingual and culturally tailored content, making the user interface simple, incorporating digital care with existing public services, using Participatory Design (PD) methods to include members of target communities in the design process, and reporting the outcomes by social-vulnerability, race, ethnicity, literacy, access.

3.8. Implementation and Health System Integration

A collaborative and connected process of primary care providers, specialists (such as endocrinologists), pharmacies, nurses, dieticians, and technology has been developed in a comprehensive manner to support obese patients' management. But, if these connections are poor, then the added complexity to already an overly complicated system that the use of digital technology will create additional barriers in delivering health care.

The findings from the scoping review by Ghosh et al. have value here. They observed that the e-health record-based tools for obesity used in primary care were mostly able to identify overweight/obesity (using BMI) as well as suggest treatment options. However, in terms of actual use in primary care settings, there were many barriers related to how cumbersome and time-consuming they were to implement into a practitioner's daily workflow, and that also limited their adoption (Ghosh et al., 2025).

The successful digital obesity programs seem to have common characteristics; they are easy to use, fit into the clinicians' workflow (roles), support their clinical thinking (do not duplicate) and help them give their patients clear, actionable follow-up instructions. On the other hand, digital programs that increase documentation burdens for the clinician, make communication among the health team members disjointed, and require unrealistic self-management by the patient are unlikely to be successfully implemented as part of the typical routines of care.

For endocrinologists and doctors who treat obesity, it means that the next stage of digital treatments isn't going to be "more" technology. Instead, it will be better organized care. Models for the best use of digital monitoring, behavioral support, medication management and clinician accountability, and as such, better aligned with the needs of both patients and their healthcare providers - thus reducing (not increasing) the cognitive and logistical burdens associated with using digital technologies.

3.9. Patient-Centered Outcomes Beyond Body Weight

Although patients' weight continues to be the primary focus for measuring success in most obesity research, the authors believe it's time to provide greater attention to other "patient-centric" (patient-centered) measures of success. The authors argue that long term successful weight loss will depend on a number of factors including, but not limited to, the individual's overall quality of life; their level of self-efficacy related to food choices/behavior; how they perceive themselves in relation to eating behaviors; their sense of control over their eating habits; their perceived level of burden in terms of completing tasks or adhering to treatment recommendations; and their general feeling of confidence as an effective manager of their own health.

Palacios et al. demonstrated through their study on digital behavioral programs that they improve both diet quality and weight loss, therefore; digital assistance can influence the quality of changes made in the way people eat and not just how much they weigh (Palacios et al., 2025). Aukan et al. also found improvement in central fat mass, disinhibited eating and quality of life through a digital therapeutic intervention that was provided within primary care settings based in communities, even though there were no significant differences in body weight after twelve weeks (Aukan et al., 2025). Finally, Lautenbach et al. reported through their study that a digital health application used for weight management improved food knowledge and an adult's perception of their overall quality of life for six months when compared to those without obesity (Lautenbach et al., 2026).

4. Discussion

Digital technology may provide a meaningful contribution to treating obese adults, provided it is viewed as part of a pathway for treatment, how services are organized at the level of the service system and how societal factors influence the accessibility and continuance of healthcare.

It has been noted that telemedicine, mobile phone apps, wearable devices, digital therapeutics and hybrid approaches to care delivery (for example a combination of both) are not equivalent forms of interventions. Further, those which included self-monitoring, education, interaction with specialists and ongoing feedback tended to be more effective than digital tools that did not offer substantial amounts of interaction and/or had minimal educational/behavioral content. This implies that while some degree of interactivity may make an intervention "digital", what ultimately determines if an intervention will be successful, is whether it uses evidence based behavioral change methods (Nunns et al., 2025; Li et al., 2025; Bertoli et al., 2025).

In this new generation, with the advent of GLP-1's, we are beginning to see a more active role for digital health: providing patients with tools to help them adhere to their treatment plans (e.g., dose titration) and coordinate their medical and behavioral efforts; tracking patients' expectations about treatment outcomes; monitoring patients for potential side effects; ensuring patients are consuming sufficient amounts of nutrients and adequate proteins; supporting patients' physical activity levels; and facilitating long-term follow-up.

The STEP data shows a consistent pattern of substantial weight gain after stopping Semaglutide, while continuing to take it, may help maintain weight loss (Wilding et al., 2022; Garvey et al., 2022). WHO guidance likewise emphasizes lifelong care and integrated management (Celletti et al., 2026). The findings suggest that Digital Obesity Services are best developed with ongoing support through a variety of mechanisms such as Relapse Prevention Strategies, Maintenance Logic and Long-Term Behavioral Support.

The hybrid model provides an opportunity to maintain both therapeutic alliance and clinical structure as well as utilize digital follow-up to maintain continuity of care between patient visits. Despite the heterogeneity of the literature, the conceptual and empirical evidence is sufficient to suggest that hybrid care could be considered one of the most viable organizational frameworks for delivering chronic obesity treatment.

Access to this type of care will depend upon many issues that are likely to exacerbate existing inequalities (affordability, literacy, connectivity, platform usability) and thus may further widen health inequities. Therefore, it is not acceptable for the current lack of data from minority, culturally diverse, and Indigenous populations to serve as a barrier to responsible generalizations about the efficacy of this form of treatment.

The evidence base for digital studies also has many limitations. Most are very short-term; a long-standing, chronic health condition such as obesity requires longer than three months of follow-up. Commercial companies can collect huge data bases; however, they rarely allow independent replication, often study only those who volunteer to use an application service (and can afford) and only provide outcomes based on company-specific care models. Each study's outcome measures vary greatly from one study to another and make it nearly impossible to evaluate the relative importance of weight loss, waist size reduction, dietary quality improvement, improved quality of life or increased usage. Lastly, there are still fewer Implementation Studies compared to Efficacy Studies - particularly in Public Systems, Primary Care and Lower Resource Settings.

To build on this research there needs to be more randomized trials which will compare different real world service pathways (not just components of apps). There needs to be longer follow up periods, particularly for medication supported treatments. To have consistent measurement across studies standard definitions need to be developed for engagement, adherence, persistence and dropout. Subgroup analyses by equity-focused subgroups need to occur routinely as do studies examining the feasibility of integrating these into clinical workflows, assessing the cost-effectiveness of using these tools in clinical practice, and evaluating how well they can interface with electronic health records.

4.1. Strengths, Limitations, and Implications for Practice

The review has synthesized a wide range of studies that include guideline recommendations, systematic reviews, randomized controlled trials, and real-world studies as opposed to using a single study type. In addition, it equally emphasizes how effective treatments are (effectiveness), how well individuals comply with treatment plans (adherence) and accessibility to services as well as equitable distribution of those services (equity) as they all contribute to the success of obesity treatment and can't be measured or compared based strictly on weight loss.

The evaluation is limited in several respects. First, it is a structured narrative review as opposed to a de novo systematic review with pooled meta-analysis of and formal risk-of-bias analysis for each study; therefore, its conclusions are interpretative but not quantitatively definitive. Second, while both PubMed and NICE represent a strong body of evidence, there may be other relevant studies (not indexed in these databases) that were missed by this search strategy. Third, the rapid pace of innovation around digital interventions means that platform capabilities can change more quickly than can occur in traditional clinical trials. Fourth, many of the GLP-1 plus digital intervention data sets are developed in commercial service or analytics environments associated with companies providing such services.

Any application which uses such tools must be grounded in behaviorally grounded content (i.e., CBT) and provide consistent interactions with professionals; require users to continually track their use of the application; provide formal methods to prevent relapse; utilize medications or nutrition/education counseling as needed; assist with management of gastrointestinal side effects; and provide assistance for continued utilization of the application over time. Additionally, services utilizing digital tools should track both patient clinical success and engagement metrics. A program appears to be successful based on clinical success metrics may not necessarily be so if engagement metrics do not reflect continued activity by most patients.

4.2. Implications for Endocrinology and Public Health

Specialists in digital platforms can provide additional endocrinology and obesity-medicine expertise beyond just a specialist's in-office visits and the possibility exists to increase access to specialty care by allowing adjustments to occur without having all specialists physically present, including Dietetics and Nursing.

However, the potential public health benefit from using digital obesity care is dependent upon it being implemented at scale within primary care and community-based models rather than using boutique or commercially provided digital obesity care programs. To achieve its full potential to contribute to a reduction in the prevalence of obesity, if digital interventions are limited to populations that are located in higher income areas, urban environments, have private insurance and/or are highly digitally literate, then the total potential public health impact of these interventions would likely be less than what could potentially be achieved technically.

Social science perspectives also demonstrate that there is no "social vacuum" where technology functions without influence from external factors such as (a) patients' work-related time commitments, (b) obligations to care for dependents, (c) confidence or lack thereof in their health system, (d) perceived stigma related to receiving treatment, (e) the level of technical knowledge required to effectively utilize digital treatments, (f) the cost of acquiring technology used for healthcare and/or treatment. Thus, the design of digital platforms, how accessible these are to users, what skills users need to be able to use them, and whether all users have equitable access to platforms will determine success in terms of increasing engagement with treatment.

Obesity research has many different disciplines involved with it (endocrinology, behavioral sciences, nutrition, implementation science, health services, inequality), and therefore there is a strong likelihood that high-quality future evidence will arise from studies that have acknowledged this multi-disciplinary nature as opposed to simply comparing "digital" to "traditional" care using app/and usual care as an example.

5. Conclusions

The potential of digital technology as a multidisciplinary adjunct to anti-obesity pharmacotherapies is being recognized increasingly. However, their principal contribution may not arise from independent application, rather through clinical integration into structured obesity care.

As such, digital tools may have particular utility in supporting engagement, promoting sustained treatment participation and facilitating links between pharmacotherapy and nutrition/behavioral interventions in the current GLP-1 based therapy era. Simply expanding availability of digital solutions will do little to address the range of structural and social barriers including stigma, workforce shortages, high cost of medications etc., that continue to impede effective obesity care.

Overall, digital technology is likely to be an important complement to traditional forms of obesity treatment when it is based upon evidence; includes multiple components (e.g., nutrition education, physical activity advice); uses behavioral theory to inform its design and content; addresses inequities in health status and healthcare delivery; does not eliminate the necessity for sustained clinical supervision and individually tailored care; and structural efforts to reduce access barriers. Digital obesity care will thrive as a form of hybrid chronic disease management - adaptive, socially accountable and clinically effective - with equal attention paid to implementation feasibility and equity.

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