Using a digital app to activate patient behavior change and improve diabetes outcomes. Harnessing the power of mobile technology.

Michelle Magee, MD[1,2]; Domenica M. Rubino, MD[3]; Jennifer Balmer, PhD[4]; Jennifer Morgan, PharmD, BCPS[4]; Jeffrey Carter, PhD[4]; Laura Simone, PhD[4]; Cherilyn Heggen, PhD[4]

(1) MedStar Health Research and Diabetes Institute, Washington, DC; (2) Georgetown University School of Medicine; (3) Washington Center for Weight Management and Research, Arlington, VA; (4) PRIME Education

Background & Purpose

Many people with type 2 diabetes (PWD/T2D) face challenges achieving and maintaining diabetes treatment goals. Digital tools have the potential to help diabetes care and education specialists (DCES) motivate and support PWD in adopting lifestyle changes to help achieve these outcomes.[1] This initiative evaluated the real-world utility and clinical effectiveness of an app-based program to facilitate behavioral change and health improvement among adults with T2D.

Hypothesis & Specific Aims

We hypothesize that use of a digital health app will improve PWD knowledge and motivation for health-related behavior change and demonstrate reductions in A1C, BMI, and weight.

Specific aims were to assess impacts of digital app engagement on:

- Participant knowledge and motivation to improve diabetes self-management
- Clinical health outcomes (A1C, BMI, weight)

Methods

Digital App Development

In partnership with **Reciprocity Health,** a digital app program was developed for diabetes providers to deliver semi-weekly support to PWD for self-identified lifestyle changes to improve T2D outcomes.

Baseline Assessment

A total of 150 PWD (T2D) in two health systems enrolled from 4/2023-2024. Baseline EMR chart audits benchmarked health measures. Surveys administered via the app collected patient-reported outcomes.

Implementation

Over the 12-week program, PWD engaged in diabetes education, goal-setting activities, and health check-ins.

Healthcare providers from the systems participated in team-based sessions to review current practices and identify process improvements to support PWD in reaching T2D goals.

Follow-up Assessment

Follow-up patient EMR chart audits and care team surveys were conducted 5-6 months following baseline assessments to measure impact of program.

Digital App Program Design & Key Components

- **12-week program with semi-weekly activities and check-ins**
- **Bite-sized education designed to be completed in 5-10 minutes**
- **Behavioral economics-based platform to motivate participation**

12-Week Patient Journey

Goal-Setting Activities

Self-Directed Activities and Check-Ins to Support Individualized Goals

- Setting A1C and Weight Goals
- Identifying New Nutritional Habits
- Incorporating Movement Into Daily Activities
- Planning to Overcome Setbacks

Education

Articles, Videos, and Interactive Quizzes to Improve Knowledge

- Health Impacts of Diabetes
- Contributors to Weight Gain
- Benefits of Physical Activity
- Healthy Nutrition
- Diabetes Medications
- Taking an Active Role in Care Decisions
- Sustaining Healthy Habits

Health Check-Ins

Regular Check-Ins to Support Self-Tracking and Progress Towards Goals:

- Weight
- Waist Circumference
- Clothes Fit
- Sleep Quality
- Energy Level
- Stress/Anxiety Level
- Optimism About Health

PRO Surveys

Questionnaires to Assess Impact on Patient Outcomes

- Patient Activation (PAM-13)
- Involvement in Shared Decision-Making (SDM-Q9)
- Treatment Adherence (MARS-5)

Results: Participant Outcomes

Table 1. Baseline Patient Demographics

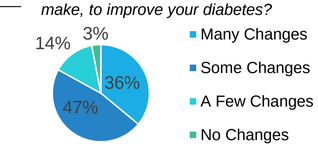
Inclusion Criteria:
- Age ≥ 18 years, diagnosis of T2D, A1C ≥ 7%, BMI ≥ 30 kg/m²
- Initiating add-on therapy to metformin or initiating a switch to GLP-1/SGLT2

Patient Charts	N = 150
Weight, mean (range), lbs	246 (150-410)
BMI, mean (range), kg/m²	40 (28-66)
A1C, mean (range), %	9.8 (7.0-15.5)
Age, mean (range), yrs	54 (22-81)
Sex, n (%)	
Female	97 (65%)
Male	53 (35%)
Race/Ethnicity, n (%)	
Black/African American	73 (49%)
Hispanic	1 (1%)
White	74 (49%)
Other	2 (1%)

Figure 1. Patient-Reported Changes for Diabetes Improvement

Patient Surveys, Week 12 (N = 150)

As a result of this program, how many changes did you make, or do you plan to make, to improve your diabetes?



How likely are you continue with the new habits you adopted during this journey?

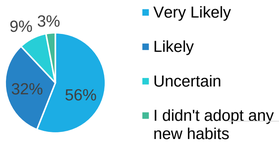


Figure 2. Patient-Reported Changes in Knowledge, Motivation, and Confidence

Patient Surveys, Week 12 (N = 150)

91% of patients reported **increased motivation** to improve their diabetes

93% of patients reported **increased knowledge** about managing their diabetes

82% of patients reported **increased confidence** working with providers to make care decisions

Figure 3. Changes in Patient Clinical Health Measures

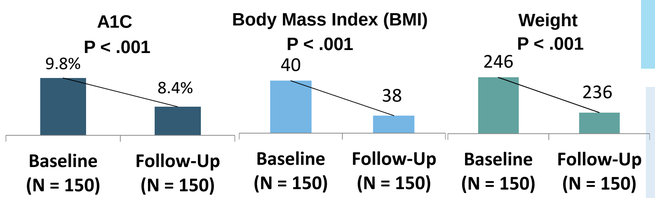
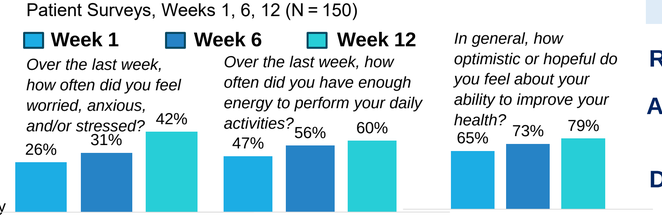


Figure 4. Patient-Reported Changes in Quality of Life

Patient Surveys, Weeks 1, 6, 12 (N = 150)



Results: Provider Impact

Figure 5. Provider-Reported Benefits of App Integration Into Patient Care

Care Team Surveys (N = 21)

43% **Motivates patients** to adopt healthier behaviors

38% **Increases patient knowledge** of healthy behaviors and treatment options

24% **Tracks patient progress** towards goals

Figure 6. Process Improvements Identified by Providers Following Program Engagement

"Closer follow-up with the patient and monitoring of A1C levels, diet, and weight"

"Drive home the importance of having a goal and a plan to lose some weight and change eating/cooking habits"

"Talk more with the patient about weight loss options and tremendous benefit with regard to A1C"

"Increase utilization of education modules and the Diabetes App"

All providers reported that they plan to continue using the app-based materials

Conclusions

- **Digital app-based programs have the potential to expand the capacity for delivery of diabetes self-care management education and support services to adults with type 2 diabetes.**
- **PWD-reported data and objective clinical measures, including a 1.4% drop in A1C and 10lb weight loss, resulting from this 12-week initiative generated evidence of its impact on behavioral and health outcomes among persons with T2D who engaged with the digital technology.**
- **Further research is needed to determine the sustainability and scalability of app-based tools for DCES to support PWD in attaining long-term health goals.**

The educational resources included in the digital app are available online as part of a **Measurement-Based Toolkit to Support Type 2 Diabetes Care Goals**.

Scan QR code to access the resource

Reference

1. Fleming GA, et al. *Diabetes Care*. 2020;43(1):250–260.

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