# AXENYA

# Clinically relevant glucose level improvement and positive behavioral changes in users of a mobile Diabetes management platform

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## Introduction

Mobile technology has transformed many aspects of clinical practice and is expected to continue expanding a patient-centered approach to tackle chronic diseases[1].  For Diabetes Mellitus (DM), evidence suggests that mobile-based interventions may improve disease management and foster positive behavioral changes[2].

Axenya's Diabetes and Lifestyle digital management system, as used in this study, enables physicians and patients to collect data and exchange information, supported by always-available health coaches. The system included software from SocialDiabetes, a nutrition application and four biosensors to upload information.

## Objectives

The objective of this study, the first of its kind in Latin America, was to test the clinical and lifestyle advantages to patients with Diabetes of using an integrated digital health platform that harvests data from different applications.

## Methods

The experimental design entailed a prospective cohort study with two different groups:
**Cohort 1:** T1D- 30 patients for 3 months - Cut level: TIR 70-180mg% > 70%
**Cohort 2:** T2D - 20 patients for 2 months - Cut level: HbA1c ≤ 7.5%

Doctors and coaches undertook weekly monitoring and a monthly survey was deployed to capture qualitative aspects. All clinical measurements were automatically recorded and uploaded to Axenya's cloud while using the mobile device.  We analyzed changes in BG control (BG-mean), estimated A1c, frequency of testing and weight variation. This was supplemented with a qualitative follow-up process with the patients, including 1 to 1 interventions and focus groups.

## Results

Patients in the study presented a statistically-significant reduction of blood glucose of 15%, and 1pp of eA1c when compared to the baseline, reaching the American Diabetes Association recommendation of 7%.

### Figure 1: Estimated reduction of hba1c and blood glucose for all patients
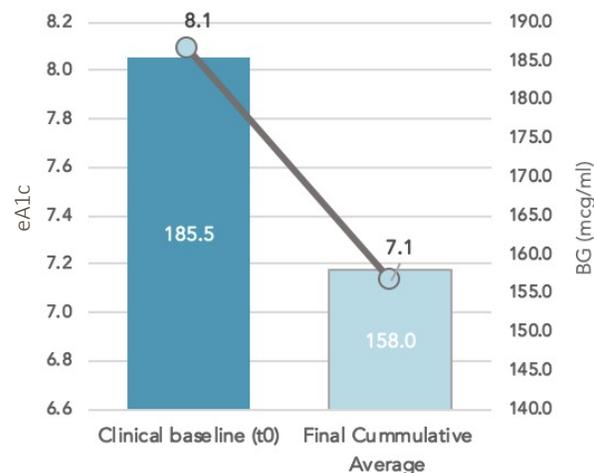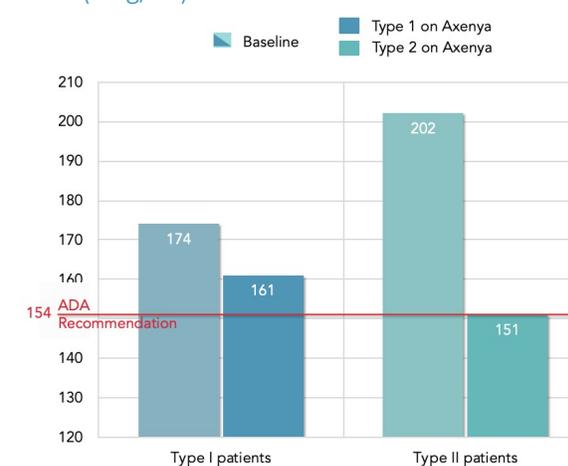


There was an average reduction of A1C of 1.8 percentage points in Type 2 patients, who started with a baseline of 8.7%.

### Figure 2: Estimated reduction in average level of A1C(%)
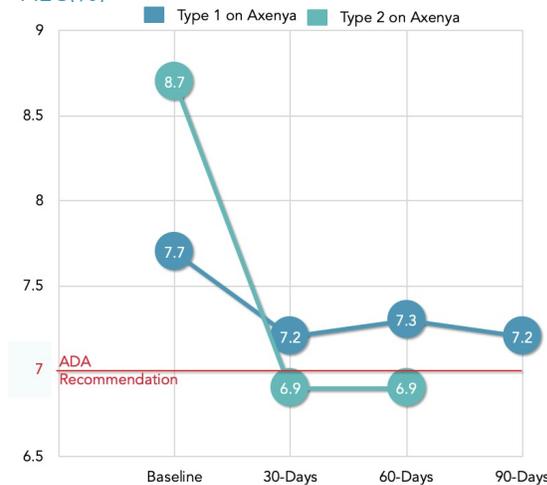


We also saw an average decrease of 13 mcg/ml in average glucose for Type 1 patients and of 51 mcg/ml for Type 2 patients.

### Figure 3: Estimated reduction of average glucose level (mcg/ml)



**Weight** was monitored for both cohorts, and reductions in average weekly weight were registered in both cohorts.

**Increase in test rate** was statistically significant for both cohorts throughout the study, for Cohort 1 from 26 to 37 times per week, and for Cohort 2 from 13 to 20 times per week.

*Note: weeks with low adherence (<14 readings) were not considered in the results, nor patients with any 4 weeks or 3 consecutive weeks with low adherence. Total excluded: 6 patients plus 8 data points.*

### Figure 4: Perception and usability of tool (% of patients replying "high" or "very high" while using Axenya)
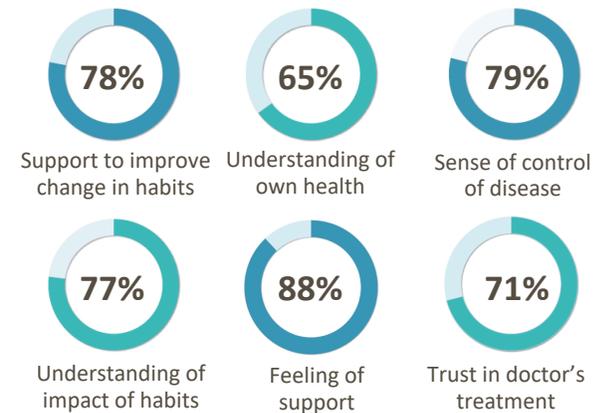


## Conclusions

This prospective cohort study suggests that use of a mobile Diabetes management platform app can generate positive changes in blood glucose levels and A1c, while triggering beneficial behavioral changes around Diabetes management.  The improvement noted in this study is possibly the first reported data point of its kind in Latin America.
It is important to note that the study was carried out in unusual epidemiological conditions due to the SARS-Cov2 (COVID-19) pandemic. More positive results could potentially be achieved outside of a pandemic context.

**References: 1.** van Rooij, T. and Marsh, S. (2016) 'eHealth: past and future perspectives', Personalized Medicine, 13(1), pp. 57–70. doi: 10.2217/pme.15.40. **2.** Liang, X. et al. (2011) 'Article : Treatment Effect of mobile phone intervention for diabetes on glycaemic control : a meta-analysis', pp. 455–463.