Reduction of Blood Glucose Average Under than 140mg/dL in People with Type 2 Diabetes Using a Digital Diabetes Management

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Introduction

Patients with high average of blood glucose levels (>180mg/dL) are at high risk for developing clinical complications[1]. Digital engagement can play a pivotal role in the care of patients with Diabetes, assisting to reduce their blood glucose average (BG avg) over time[2]. A large, real-world group of people with Type 2 Diabetes was assessed in this study to analyze important components of diabetes management. The study reviews Dario users, ability to sustain BG avg<140 mg/dL over time while using the Dario™ Blood Glucose Monitoring System (BGMS).

Method

A retrospective data evaluation study was performed on the Dario™ cloud database. A population of active T2D users that continuously measured for 6 months was evaluated. The study assessed their BG avg based on blood glucose readings as recorded in the database. Values were calculated in periods of 3 and 6 months and compared to their first 30 days as a starting point analysis. Also estimated A1C (eA1C) values were calculated based on the reading to provide an additional prespective of the data[3].

Results

- 1248 Dario BGMS active users with T2D (1.98 measurements per day on average for 6 months in a row) with BG avg >140mg/dL (eA1C>6.5) were evaluated.
- All users (100%) reduced their BG avg within the 6 month period (Figure 1).
- A group of 31% (387) users achieved BG avg of <140 mg/dL (eA1C<6.5) after 3 months showing a 19% reduction on average from baseline (132.4±13.4 vs.162.8±25.4 mg/dL and eA1C 6.24±0.46 vs 7.3±0.88) and sustained their glycemic control for a period of 6 months (131.6±13.9 mg/dL and eA1C 6.21±0.48) (Table 1, Figure 2).
- Subgroup analyses of 568 non-insulin users revealed that 40% (226) achieved a BG avg <140 mg/dL after 3 months (132.0±13.2 vs.161. 7±24.2 mg/dL and eA1C 6.22±0.46 vs 7.26±0.84) and sustained for 6 months period (131.0±13.7 mg/dL and eA1C 6.19±0.47). During 6 month period, hypo events (<50mg/dL) per user per month on average remained unchanged.

Reduction of Blood Glucose Average in T2D

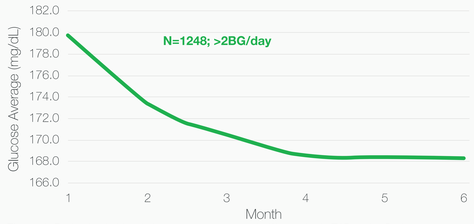

Figure 1: Reduction in blood glucose average over six (6) months in T2D active Dario users.

Reduction of Blood Glucose Average below 140 mg/dL in 30% of T2D

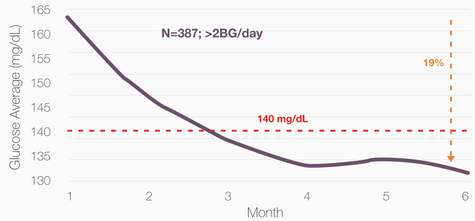

Figure 2: Reduction in blood glucose average below 140 mg/dL over six (6) months in T2D active Dario users.

Table 1: Blood Glucose average over six (6) months in T2D Dario users.

Blood Glucose Average (mg/dL)							
Population	**Type**	**1 month**	**2 month**	**3 month**	**4 month**	**5 month**	**6 month**
N=1248	T2D	179.6±38.4	172.9±38.3	170.2±39.4	168.3±39.3	168.2±40.1	168.1±41.7
N=387 (30%)	T2D <140 mg/dL	162.8±25.4	147.5±23.7	138.8±17.2	132.4±13.4	133.7±15.6	131.6±13.9

Discussion

Reduction of BG avg in a large group, using a digital blood glucose management system in this study is substantial. BG avg of less of 140mg/dL is an important threshold:

- ADA suggests stringent A1C goals such as 6.5% (equivalent to avg 140 mg/dL) for selected individual patients if this can be achieved without significant hypoglycemia. Moreover, keeping blood glucose at target levels helps people with Diabetes to avoid serious complications from their condition, and reducing postprandial glucose values to less than 180 mg/dL may help to lower A1C[1].
- Remission of diabetes has been defined recently in Type 2 Diabetes as HbA1C of less than 6.5% (<140 mg/dL) after at least 2 months off all antidiabetic medications, from baseline to 12 months, as a co-primary outcome with weight loss[4].

The results of the present study show a reduction in blood glucose average in Dario users with Type 2 Diabetes and sustainment of blood glucose average level following 6 months. Furthermore, 30% of T2D and 40% of T2D non-Insulin populations had improved their average below 140 mg/dL on average by 19%.
Those findings may be interpreted by the fact that the Dario App provides the users several decision support features to understand their clinical results and condition management status for example: Dario App clearly indicates to the user using a color scheme on their measurement in-range status (red – low, green – in range, purple – high). The time in-range percentage of measurements shows as the main screen of the App and may motivate the user to improve. The App gives a set of graphs and a detailed logbook that the user can browse and easily learn the cause and effect of actions taken and the corresponding blood glucose levels.

These digital diabetes data points may help the users enhance their awareness and understanding to better manage their condition, and consequently improve their clinical outcomes. Previous supported studies have shown that users of a mobile digital platform had fewer hyperglycemic events compared to the control group and the display of data from a mobile application can contribute to improving glycemic control[5,6,7,8].

Conclusion

Patients using a digital Diabetes management platform have the potential to promote behavioral modification and sustain adherence to diabetes management, demonstrating better glycemic control.

References

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