

Effects of the use of glucometers with an automatic calculation of pre-prandial insulin bolus through a mobile phone application on the blood glucose control and quality of life of patients with type 1 diabetes

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INTRODUCTION

The adequate treatment of patients with type 1 diabetes mellitus (T1D) requires basal insulin to control de hepatic production of glucose and pre-prandial insulin bolus to control postprandial blood glucose. The pre-prandial boluses are achieved through the calculation of Ratio (R) and Sensitivity (S). In our hospital, patients must calculate manually the dose of the pre-prandial bolus with glucometers that exclusively give information of capillary blood glucose

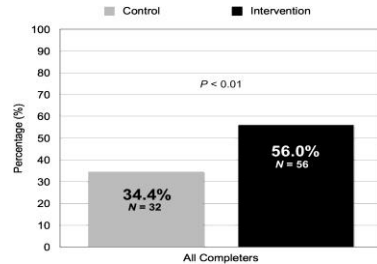


Figure 1

OBJECTIVES

1. Asses changes in A1c after 3 months of using the glucometer with bolus calculator through an App
2. Asses the degree of patients' satisfaction with the use of the bolus calculator using the DTSQ survey (Diabetes Treatment Satisfaction Questionnaire)

METHODS

Prospective study.

Inclusion criteria:

- 1-Type 1 diabetes patients
- 2- Treatment with analog insulin for more than 12 months
- 3- Trained in carbohydrate counting and bolus calculating using R and S
- 4- Owning a smartphone

Exclusion criteria:

- 1- Pregnancy or breastfeeding

Informed consent is signed. A1c is registered and they complete the satisfaction DTQS, regarding the method use on bolus calculation, in which the answers range from 6 (maximum) to 0 (minimum). They receive a glucometer (the Accu-Check® Instant System; Roche Diabetes Care) and are trained on its use and the App Accu-Chek Connect®.

Patients were assessed during their regular 3 month control with a new A1c. In this control patients answered again the DTSQ survey. The before and after answers are analyzed with the t student t, significance with $p < 0.05$

RESULTS

Of the 10 patients enrolled, 8 had full data. Initial mean A1c was of 8.5% and the final was 8.0% ($P=0.45$).



CONCLUSIONS

There was a decrease on A1c and a better appreciation and satisfaction with the method that allowed an automatic calculation of insulin bolus. The small number of patients is limiting, but the results are concordant with the literature.

Table 1

DQST questions	Initial	Final	p
¿Are you satisfied with your current treatment?	4,37	5,37	0,007
Lately, ¿how often have you considered your blood glucose level as too high?	3,50	2,87	0,24
Lately, ¿how often have you considered your blood glucose level as too low?	2,25	2,00	0,66
Lately, ¿To what extent do you consider your treatment as practical/comfortable?	4,00	5,12	0,006
Lately, ¿To what extent do you consider your treatment as flexible?	4,62	5,75	<0,001
¿To what extent are you satisfied with your knowledge regarding your diabetes?	4,87	5,62	0,11
¿Would you recommend this way of treatment to someone with a diabetes similar to yours?	5,00	5,75	0,06
¿To what extent would you be satisfied of continuing your actual treatment?	4,50	5,25	0,04

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