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ORIGINAL ARTICLE

Development and Validation of a Computer Application to Aid the Physician's Decision-Making Process at the Start of and during Treatment with Insulin in Type 2 Diabetes: A Randomized and Controlled Trial

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Abstract

Background:

Achieving optimum blood glucose control in patients with type 2 diabetes mellitus (T2DM) is difficult. Some primary care physicians (PCPs) delay the start of insulin use because of the uncertainty in intensifying insulin therapy. The objective was to develop and validate a computer application (CA) that helps PCPs to make decisions about insulin therapy in order to achieve a significant improvement in glycated hemoglobin (HbA1c).

Methods:

This was a cluster-randomized clinical trial. Fourteen primary care centers (PCCs) in Madrid with 66 PCPs and 697 T2DM patients on insulin therapy were randomly divided into two groups of seven PCCs each. In the intervention group, seven PCCs included 39 PCPs and 365 T2DM patients on insulin therapy. These PCPs were free to use the CA. A further seven PCCs were assigned to the control group with 27 PCPs and 332 T2DM patients on insulin therapy. The control group did not use the CA. The duration of the trial was 18 months to validate the CA. The outcome was a change in HbA1c from baseline.

Results:

In the intervention group, the final HbA1c was 7.19% (standard deviation [SD] ± 0.93), with a difference from the start of -0.69% (p = .001). In the control group, it was 7.71% (SD ± 1.37), with a difference from the start of -0.09% (p not significant).

Conclusions:

This CA helps to improve HbA1c figures of T2DM patients with insulin when it is used by PCPs to make decisions when starting, continuing, or changing insulin and its dosage.

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Abbreviations: (ADA) American Diabetes Association, (CA) computer application, (HbA1c) glycated hemoglobin, (IDF) International Diabetes Federation, (PCC) primary care center, (PCP) primary care physician, (SD) standard deviation, (T2DM) type 2 diabetes mellitus

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