

Brief communications

Basic characteristics and treatment regimens in people with type 2 diabetes who participated in the International Diabetes Management Practices Study in Costa Rica

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Abstract

Background: The International Diabetes Management Practice Study was a worldwide observational study with the aim to determine the standard of care of diabetic patients in different regions around the world and the adherence to the international guidelines regarding diabetic care and management. Around the world 15,016 patients with type 2 diabetes were enrolled in this study, published previously by Ringborg et al, in the International Journal of Clinical Practice in 2009. The following study corresponds to the sub study which analyzed the patients who participated in Costa Rica.

Results: In Costa Rica 49 type 2 diabetic patients were recruited from the private practice of 5 endocrinologists from March 22nd to April 24th, 2007. The mean fasting blood sugar value of the patients studied was of 140.45mg/dL \pm 56.3. With respect to glycemic control, the study showed that 60% of patients had an HbA_{1c} > 7% and 17.5% of them had a value greater than 9%. All the patients who were evaluated had some type of pharmacologic agent in their therapeutic regimen. Around sixty-three percent (63.6%) of the patients who were treated with oral antidiabetic agents and 45.5% with insulin alone reached the target of an HbA_{1c} < 7%, respectively. To a lesser extent (22.2%) patients who were treated with both types of medications reached that goal.

Conclusion: In this study the majority of patients (60%), did not meet criteria for an adequate glycemic control (HbA_{1c} < 7%) despite the broad scientific evidence available which demonstrates that an adequate glycemic control effectively reduces micro and macrovascular complications. More emphasis needs to be added to improve treatment for patients with type 2 diabetes in Costa Rica.

Keywords: Type 2 diabetes *mellitus*, IDMPS (International Diabetes Management Practice Study), HbA_{1c}.

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The IDMPS¹ (International Diabetes Management Practice Study) is an observational, multinational investigation in which the objective was to assess the standard of care for patients with diabetes in different regions in the world and to evaluate adherence to international guidelines on diabetes management. A total of 15016 patients with type 2 diabetes, older than 18 years, were evaluated worldwide and 27 countries from Eastern Europe, Asia, Africa and Latin America, including Costa Rica, participated. In this paper, the results from the IDMPS study in Costa Rica are presented, and compared to the information obtained from Latin America.

Methods

The study was approved by the Institutional Review Board of Universidad de Ciencias Médicas (CEC-UCIMED). Patients with type 2 diabetes who attended the private practice of 5 Costa Rican endocrinologists were included, after accepting to participate voluntarily and signing the informed consent. A questionnaire designed to collect data on anthropometric measurements, diabetes evolution, glucose levels, glycated hemoglobin (HbA_{1c}) and type of treatment received was used.

Results

Each of the endocrinologists recruited an average of 10 patients, who visited their practice during a two week period. Forty nine patients with type 2 diabetes who had an appointment between March 22nd and April 24th 2007 comprise the study group. Mean age was 59,3± 11,6 years; body mass index (BMI) was 30,84 ± 5,71 kg/m² (men 30,6 ± 4,6 and women 31,05 ± 6,5) and mean disease duration was 11,59 ± 8,44 years.

Sixty percent of patients had HbA_{1c}>7%, and specifically, 17,5% of Costa Rican patients had HbA_{1c} >9%. This percentage is similar to that from data collected for Latin America in the original study. HbA_{1c} levels of Costa Rican patients and of patients from the Latin America study are shown in figure 1.

Regarding fasting glucose levels, the patients had a mean value of 140,45 ± 56,3 mg/dl. Figure 3 compares the results obtained for HbA_{1c} to those obtained for fasting glucose. Patients with HbA_{1c} lower than 7% had a mean fasting glucose of 122,3 ± 25,9 mg/dl, a figure similar to the one from the group that had HbA_{1c} between 8% and 9%. Patients with HbA_{1c} greater than 9% had a mean fasting glucose of 152,5 ± 36,3 mg/dl.

Discussion

When analyzing glycemic control in Costa Rican patients with diabetes in the study, it was found that the percentage not achieving the goal, those with HbA_{1c} > 7%, was 60%. In fact, 17,5% of the patients in the study had a HbA_{1c} higher than 9%. As it can be observed, most patients are not achieving the goal, similar to what has been found in other countries in Latin America, where the HbA_{1c} goal is not achieved in 63% of the cases, which demands a call to action.¹

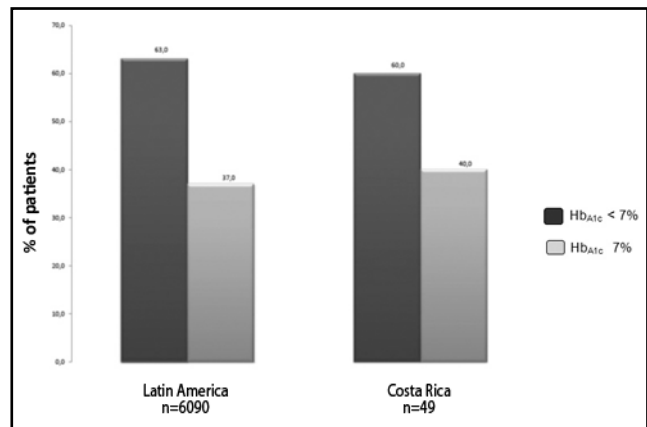


Figure 1. Glycemic control in patients with type 2 diabetes. Comparison between Latin America and Costa Rica.

By carefully analyzing the type of therapy used by these patients, it is seen that 100% were receiving pharmacotherapy, which is consistent with international guidelines that recommend adding at least metformin to diet and exercise for the treatment of type 2 diabetes mellitus.

Of all patients treated with oral antidiabetic agents exclusively, 63,6% reached the HbA_{1c} goal of less than 7%. However, 36,4% did not achieve the goal (HbA_{1c} >7%). Furthermore, as shown in figure 2, only 22,2% of the patients treated with a combination of oral antidiabetic agents and insulin reached the goal. Data on patients treated with insulin showed that 45,5% had a HbA_{1c} <7%. This correlates with other studies, where the patient treated with insulin has less glycemic control, probably secondary to greater beta cell failure.² Poor adherence also must be considered, since multiple studies have demonstrated that treatment adherence in type 2 diabetes is not optimal, and is comparable with that of other chronic diseases.³

Interestingly, the group of patients treated with a combination of oral antidiabetic agents and insulin was the one with the highest percentage of patients not controlled: 77,8%. Out of these, 44,4% had HbA_{1c} levels in a range between 7% and 8%, and 33,4% had HbA_{1c} levels > 8%. Some possible explanations could be the following: 1-delay in the onset of insulin therapy, 2- lack of adjustment of basal insulin dose, 3- delay in the start of a second prandial dose of insulin, or delay in adjustment of a mixed insulin regimen, or simply selection bias given the characteristics of the study. Additionally, it must be considered that failure to reach the goal might be due to lack of adherence to a complicated treatment regimen, such as the combination of oral antidiabetic agents and insulin.⁴ When analyzing which group of patients, according to therapeutic group, had worst control (HbA_{1c} > 8%), the same relation previously discussed was found, where the group with antidiabetic agents plus insulin had the highest percentage of uncontrolled patients (33,4%). Researchers like Lerman I., suggest strategies to

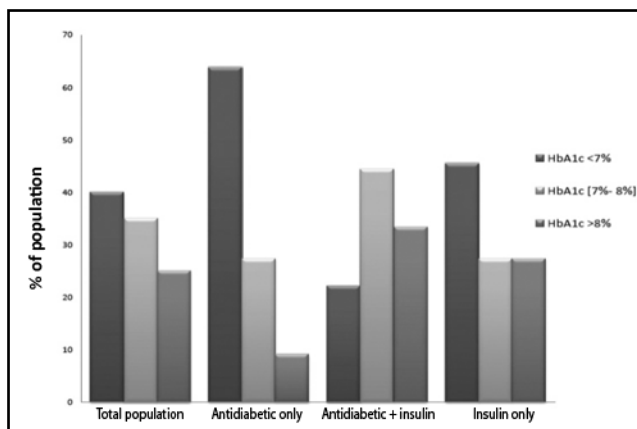


Figure 2. Glycemic control in patients with type 2 diabetes, according to type of therapy.

improve treatment adherence, such as keeping the treatment regimen as simple as possible, discussing priorities with the patient, educating about treatment adherence and monitoring it on every visit, among others.⁴

The results displayed in figure 3 indicate that fasting glucose, by itself, is not enough to monitor control in a patient with diabetes, and it is necessary to measure postprandial glucose and, obviously HbA_{1c}.⁵

This coincides with studies published by Monnier I. *et al*,⁶ which showed that at higher HbA_{1c} levels, the main contributor to overall hyperglycemia is fasting glucose, and as HbA_{1c} approaches the goal, the main contributor is postprandial glucose.⁷

Important studies have demonstrated the great impact that glycemic control exerts in terms of cardiovascular complications, as described by the UKPDS,⁸ that showed that for every 1% reduction in HbA_{1c} the risk for microvascular complications decreased by 35% and the risk for macrovascular complications decreased by 16%. Unfortunately, despite this and other publications, and recommendations regarding therapeutic approaches from organizations such as the American Diabetes Association, most Costa Rican patients did not achieve the HbA_{1c} goal.^{8,9}

Therefore, we conclude that it is necessary to emphasize on creating guidelines that are more efficient, and to increase efforts in seeking a broader access to diabetes education for patients and their families in Costa Rica, as well as in Latin America.

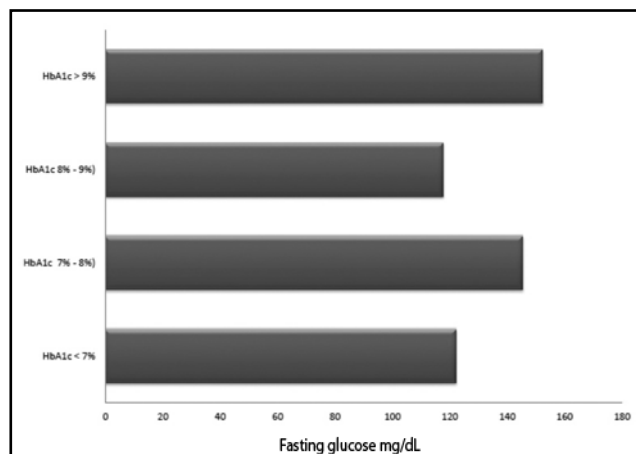


Figure 3. HbA_{1c} in patients with type 2 diabetes, compared to fasting glucose.

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