



Real-World Adherence to Glycemic Self-Monitoring and Associated Factors Among Type 2 Diabetes Patients in Algeria: A Descriptive Cross-Sectional Study

Mohamed Yacine ACHOURI^{1,2}, Younes ZEBBICHE^{2,3}, Abdelhakim BOUDIS^{2,3}

1 University Of Sidi Bel Abbes (Algeria), 2Algerian Federation of Pharmacy, 3 University of Algiers (Algeria)



INTRODUCTION

In Algeria, several epidemiological studies report a prevalence of type 2 diabetes ranging from 10% to 20% (INSP, 2005; Houti et al., 2016). The awareness of the alarming spread of this pathology and the severity of its complications has led the International Diabetes Federation to declare the necessity of regular monitoring of diabetics, which is essential to control glycemic balance (FID, 2019). Several institutions and learned societies (IDF, ADA, NICE, etc.) regularly publish management strategies to optimize glycemic control. In all these recommendations, self-monitoring of blood glucose (SMBG) is cited as one of the key elements for achieving satisfactory glycemic control in both type 1 and type 2 diabetics (Mosnier-Pudar, 2012). The French High Health Authority (HAS) recommends the use of SMBG in patients treated with insulin or those for whom insulin therapy is planned in the short or medium term, as well as in patients treated with insulin secretagogues (sulfonylureas or glinides alone or in combination with other antidiabetic medications), when hypoglycemia is suspected, and in patients whose therapeutic goal is not achieved, particularly due to an underlying illness or treatment (HAS, 2011). However, despite the advances made in recent years in terms of therapeutic education, SMBG is still not optimally practiced by many diabetic patients (Reach, 2010). A study involving 41,363 type 2 diabetic patients shows that 67% of them measure their blood glucose at least once daily (Karter et al., 2000). In Algeria, despite the significant prevalence of diabetes, interest in evaluating adherence to and practices of SMBG is relatively recent and knowledge in this area is less advanced compared to other countries. The aim of this study was to evaluate the practices of self-monitoring of blood glucose among diabetic patients.

The aim of this study was to evaluate SMBG practices among type 2 diabetic patients followed in outpatient settings in the Tiaret region, and to identify factors associated with non-compliance with SMBG recommendations.

METHODOLOGY

This is a descriptive, cross-sectional study conducted among type 2 diabetic patients in the Tiaret region (Algeria). Included in this study are male and female patients with type 2 diabetes mellitus.

The minimum sample size was calculated using the standard formula and should be at least 363 patients.

The survey took place over a period of 2 months from January 21st to March 19th, 2020.

Data collection was done through a questionnaire completed by interns, based on the patient's oral responses and input from follow-up records for certain data. The questionnaire was administered to the patient at the end of the consultation, after obtaining their consent.

The questionnaire allowed for the collection of information on adherence to self-monitoring of blood glucose (SMBG) and practices related to its implementation.

First, a descriptive analysis of all collected data was performed, and the second part of the study involved identifying factors associated with non-compliance with SMBG recommendations. To this end, two patient groups were formed: the group of patients not adhering to SMBG recommendations (SMBG-) and the group of adherent patients (SMBG+). In the univariate analysis, associations between variables were tested using the chi-square test with a significance threshold of 5%. 252 contingency tables were established to calculate Odds Ratios (OR) with 95% confidence intervals (CI).

A multivariate analysis by logistic regression was conducted, with the dependent variable being the binary variable "Adherence to SMBG recommendations" with two modalities: "SMBG+" and "SMBG-".

Optimal self-monitoring of blood glucose (SMBG+) was defined as a number of measurements equal to or greater than 4 points per day in type 2 diabetic patients under insulin therapy or mixed therapy (oral antidiabetic drugs (OADs) + insulin), and at least 1 point per day in type 2 diabetic patients under oral therapy alone; patients not meeting these definitions were classified as non-adherent (SMBG-).

DISCUSSION

The study aimed to assess adherence to self-monitoring of blood glucose (SMBG) recommendations among type 2 diabetes patients in the Tiaret region, Algeria, and to identify factors predicting poor adherence to these recommendations. The study sample included 419 patients, with a mean age of 58.2 years. Results revealed that 58% of patients did not adequately adhere to SMBG recommendations.

Factors associated with poor adherence included poor glycemic control, concurrent use of oral antidiabetic drugs and insulin, age between 51 and 60 years, disease duration of 1 to 10 years, and medication non-adherence. Conversely, some factors were associated with good adherence, including employment status, marital status, urban residence, recent hypoglycemia or hyperglycemia, and presence of dyslipidemia. Additionally, patients whose blood glucose was measured by a family member were also more likely to be adherent.

These findings highlight the widespread prevalence of poor SMBG adherence among type 2 diabetes patients, with significant implications for disease management and associated healthcare costs.

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RESULTS

The study involved 419 type 2 diabetic patients followed up in outpatient settings in both public and private facilities in the Tiaret region.

The assessment of adherence level revealed that 244 patients within the study population were non-adherent to the recommendations for self-monitoring of blood glucose (ASG-), resulting in a non-adherence prevalence of 58.23%. Additionally, optimal use of blood glucose monitors (ASG+) was observed in 175 patients, accounting for 41.77%.



The percentages of patients adhering to the different recommendations for proper capillary blood glucose measurement are represented in Table 1.

Table 1 : Adherence to self-monitoring blood glucose recommendations in 419 diabetic patients (Tiaret, Algeria).

Practice	YES	NO
Hand washing before each blood glucose measurement	80.7%	19.3%
Use of alcohol or alcohol-based hand sanitizer	42.7%	56.8%
New lancet with each measurement	66.6%	33.4%
Cleaning the device after each measurement	88.3%	11.7%
Checking the expiration date of the test strips	53.9%	46.1%
Sensation of pain when stung	45.8%	54.2%
Keeping the strips in the original box	89%	11%
Storing the strips in the refrigerator	3.6%	96.4%
Are you aware of the availability of control solutions?	5.3%	94.7%
How do you use control solutions?	2.1%	97.9%

CONCLUSION

The results of prestigious studies on diabetes have established that glycated hemoglobin (HbA1c) represents the gold standard method for assessing long-term glycemic control. However, this parameter does not provide real-time information on potential hypoglycemic or hyperglycemic events. Real-time information provided by blood glucose self-monitoring (SMBG) is an important complement to HbA1c. The importance of SMBG is widely appreciated and recommended as a central element of management in patients with type 2 diabetes. In light of our results, it is necessary to implement an action plan to address poor adherence to SMBG recommendations, which is a widespread and multifactorial phenomenon in Algeria. Therapeutic education should be an integral part of the management of type 2 diabetic patients, helping the patient and their family to better understand the disease, the treatments used to combat it, and to improve their quality of life. Patients with a disease duration between 1 and 10 years should receive special attention in terms of therapeutic education. Moreover, addressing poor adherence to SMBG can contribute to reducing healthcare costs and improving the overall economy of healthcare systems.

Conflict of interest

The authors have no conflicts of interest regarding the content of this poster.