



Original Article

**HBA1C ACCEPTANCE & AWARENESS IN DIABETIC PATIENTS IN PAKISTAN**

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**ABSTRACT**

Received on: 10-10-2015  
Accepted on: 12-12-2015

**Aim and Objective:** This study was performed to estimate awareness among diabetic patients about the importance of glycosylated Hemoglobin (HbA1c ), in the management of diabetes mellitus. **Background:** HbA1c measurement is now an integral part of management of Diabetes Mellitus (DM). It has a significant impact on health of diabetic patients by giving average blood sugar level 8 + 2 weeks or 2-3 months. It is an alternate to regular blood sugar checkup which is conventional method of status of blood sugar control. **Material & Method:** 200 adult patients attending Diabetic Out Patient Department( OPD) Jinnah Post Graduate Centre( JPMC)were included in the study. A questionnaire was developed for this purpose. All patients had NIDDM. Those with IDDM is not considered patient with poor compliance and irregular visits are also not considered. **Result:** There were only 44 patients out of 200 (22%) who were aware of the importance of HbA1c while 30 (15%) had an understanding of the importance of HbA1c in management of Diabetes Mellitus and its complications. This acceptance level of HbA1c in our study. **Conclusion:** Awareness about HbA1c is beneficial and alternate for blood sugar monitoring.

**Key words:** Awareness, glycosylated Hemoglobin (HbA1c), Diabetes Mellitus  
MC Karachi 2016; 22(1): 66-69

**INTRODUCTION**

With the development of cheaper technologies, now almost all patients with diabetes mellitus, in the urban areas of Pakistan, has access to glucometer for blood sugar level checkup at home. Additionally most doctor in Pakistan desire the patients to get level of glycosylated hemoglobin (HbA1c( determined so as to manage the diabetes mellitus effectively.)

HbA1c or glycosylated Hemoglobin which is developed when

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haemoglobin joins with glucose in the blood, becoming 'glycated'. By measuring glycated haemoglobin (HbA1c), doctors are able to get an overall picture of what our average blood sugar levels have been over a period of weeks/months<sup>2</sup>. It is considered as a good test to check the accuracy and/or any errors in the measured blood sugar levels and can be used for monitoring glucometer accuracy<sup>1</sup>. HbA1c measurement is one of the diagnostic criteria for the diagnosis of non insulin dependent diabetes mellitus (NIDDM)<sup>2,3</sup>.

Now the doctors try to manage diabetes mellitus through various drugs, diet and exercise with the aim to obtain a lower of HbA1c which is an indicative of proper management of NIDDM. Two large scale UK based studies showed that improving the HbA1c by 1% means an approximately 25% decrease in microvascular complications i.e. diabetic retinopathy, neuropathy and nephropathy as well decrease incidence

of cataract, heart failure and especially amputation<sup>4,5</sup>. Awareness programmes are regularly being conducted by various organization, doctors, NGOs and others in Pakistan regarding diabetes mellitus and its complications, HbA1c and its importance as a diagnostic tool. Most diabetic patients in Pakistan are usually unaware of HbA1c and its significance in the management of DM. Majority of patients, however, have good understanding of blood sugar monitoring<sup>6</sup>. Most patients now regularly assess their blood sugar levels at home using a glucometer. Since HbA1c measurement is a good way to monitor status of blood sugar during a longer period of time thus may also function as a quality control method for ensuring accuracy of glucometer results as accurate monitoring of results is essential for proper management of Diabetes Mellitus and its complications. Since most patients in Pakistan are not well aware of the use and benefits of

**TABLE-I:**

Percentage of patients showing awareness about various aspects of the role of HbA1c in DM:

Aware of	No. of Patients.	Percentage
Correct name	4	2%
Significance of HbA1c in DM	44	22%
Knowledge of risk	60	30%
Harmful impact of deranged HbA1c test report	48	24%
Direct health effect	4	2%
Facilities available in the centre	12	6%
Importance of testing for HbA1c	4	2%
Awareness was better in graduates and in the higher income group.		

**TABLE 2:**

Characteristics of patients who were aware and unaware of importance of HbA1c in DM (n=200)

		Aware	Unaware
Gender	Male	44 (22%)	56 (28%)
	Female	49 (24.5%)	51 (25.5%)
Education Status	Graduate	25 (12.5%)	07 (3.5%)
	Non Graduate	13 (6%)	155 (77.5%)
Monthly Income	Income < Rs.25000 /month	18 (9%)	47 (23.5%)
	Income > Rs.25000 /month	120 (60%)	15 (7.5%)
Consultation	Doctor visits, 3 visits/ year	28 (14%)	48 (24%)
	Doctor visits > 12/year	37 (18.5%)	87 (43.5%)
Treatment	Insulin treatment	18 (9%)	19 (9.5%)
	Oral drugs	52 (26%)	111 (55.5%)

**Table 3:**  
Awareness about HbA1c in patients with complications

Complications:	No. of Patients	Aware	Unaware With Complications
Retinopathy	31	19 ( 59%)	13 (41%)
Nephropathy	91	42 ( 46 %)	49 ( 54%)
Diabetic Foot	42	37 (88%)	5 ( 12%)
Neuropathy	59	18 (30.5%)	41 (69.5%)

measuring HbA1c, therefore, a study on the awareness and knowledge about HbA1c was carried out.

### MATERIAL & METHODS

A total of 200 DM patients who attended the Diabetic Out Patient Department (OPD), Jinnah Postgraduate Medical Centre (JPMC), Karachi were enrolled in the study. All subjects were observed to be responsive and keen. Out of the total 88(44%) patients were male and 112(56%) were females and known cases of NIDDM. A questionnaire was developed for the study to assess the level of awareness about HbA1c. Most patients had never completed secondary education. They were concerned about the disease and its treatment. The patient are suffering from DM but were not concern about its investigations, management and also about complications but insouciant, on the other hand patients in study and are worry and concern about their health. The patients enrolled in this study were distinct and as in our population were mostly carefree and belonged to all age groups of people.

### RESULTS

There were only 44(22%) patients out of 200 who were aware of the HbA1c and its importance while 30 (15%) had an understanding of the importance of HbA1c in management of Diabetes Mellitus and its complications Fig 1-3). The results are also presented in Table 1 to 3. **Table-I:** Percentage of patients showing awareness about various aspects of the role of HbA1c in DM was presented in Table-1 which shows that 22 % of patients were well aware of the importance of HbA1c. Table 2 shows the characteristics of patients who were aware and unaware of importance of HbA1c. It was interesting to note that those having high monthly income are more aware of HbA1c because getting HbA1c level determined by a private laboratory is quite expensive, therefore, patient with low income

seldom get this test done.. In the Table 3 result of the awareness about HbA1c in patients with complications was mention

### DISCUSSION

HbA1c was first introduced as important test in the management of diabetic patients in 1976 but various studies have shown that diabetic patients have been very slow in accepting HbA1c measurement in the management of the disease<sup>7</sup>. Studies have shown that about 25% patients are aware about the significance of HbA1c in DM and its management. In the present study, 22% patients were observed to be aware of the importance of HbA1c in DM. A similar results was obtained by Glasgow and Osteen<sup>7</sup>..

According to another study<sup>8</sup>, about 29% patients who regularly visited their physicians (average 18 visits per year) were aware about the significance of HbA1c compared to just 4% of those patients who visited their physicians only rarely ( 4 visits per year). During the present study, number of visits to the doctor were observed to have no impact on the awareness about HbA1c .

Studies have also found that a number of factors apart from number of patient visits to the physician were important in creating awareness about the significance of HbA1c in DM. These factors include: education, income, whether patients were treated by Insulin or oral medicine. presence of complications etc. Studies demonstrate that awareness about the important role of HbA1c was generally greater in those people who were educated and had high income compared to those who were uneducated or less educated or had low incomes our finding were similar<sup>9,10,11,12</sup>. Education, income, insulin or otherwise treatment, association of presence of complication and awareness is mentioned in chart<sup>6, 13</sup>.

### CONCLUSION

Awareness group has a better overall consistent demographic, treatment and disease complication profile. HbA1c provide an alternate for monitoring of blood sugar. Depending upon its results it may be source of sense of well being and self confidence or otherwise apprehension

### Limitation

- It is not an absolutely correct method as it does not given exact average of 8-12 weeks. Rather, it is influenced by blood sugar level of the most recent weeks.
- This study is not a true reflection of the populations as only health conscious patients were included in our study who do not represent the majority of the population.

### AUTHORS INPUT

**M. R , M A, NA :** All authors contributed equally, **S A:** Data analysis and references

**Conflict of Interest :** Author declare that there is no conflact of interet

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