HBA1C: Practical Use in Primary Health Care in Our Set Up

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Objective: To gather the data from a sample of diabetic population from primary care to see the control of diabetes and to see if really HBA1c Value is practically imparting some thing to get to a better control and if we need to put in some other factors which may improve the control of glycemia in our primary care set ups check what percentage of pts are on insulin if they are not achieving targets.
Method and design: A cross sectional randomized observational study done at Shalamar Hospital to see HbA1C levels of control of patients who are coming for the first time in this facility and have been treated by primary care physician. Only those patients were included who had there HBA1C levels done at least once in last 6 months.
Results: The results in our sample were very unsatisfactory and the lowest A1C which we saw was 8.1 and max was 16.20 with mean of 10.74 and STD 1.658 .In spite of the fact the patients who were on insulin were 35.3% The Average HBA1C of the patients who were on insulin was 11.16% and average A1C of patients who were on OAD was 10.51%
Conclusion: It seems like asking for HBa1C level is just a routine we are not getting any benefit of this expensive investigation by stepping up the treatment to achieve the target .As seen in the study that not a single patient has achieved the target and most of them are still on OAD and even if they are shifted on insulin no further intensification has been done. Education of patients and Doctors dealing with diabetics in Primary care needs to be encouraged This will not only give us good targets of control but will reduce the load on tertiary care centers and cost of complication and treatment in this already overburdened health system with scarce resources
Key words: HbA1C, diabetes mellitus, non communicable disease

INTRODUCTON

Epidemic of Diabetes Mellitus sees no boundaries it affects developed developing and underdeveloped countries. Pakistan is placed at number 10 in the world for endemic of this problem in yr 2030[1] considering the fact that we are struggling economy and traditionally heath budget is not a priority with our financial policy makers. We are lacking in controlling this problem. We are also a country where we are still fighting with infectious diseases and recently Dengue has emerged as one of the very dangerous and resource depleting infectious disease our priority has shifted further from non communicable chronic diseases like Diabetes mellitus. The burden of Diabetes Mellitus in our country has been studied from time to time both in rural areas and compared with the urban population and has also been published; it stands out to be around more than 10 % overall[2,3,4]. It makes it very difficult to bear the expense of communicable and infectious disease and on top of that fighting with this non communicable endemic is taking its toll too. It is also a very well known and proven fact by a number of studies and data analysis that controlling the disease, prevents the complication[5,6,7].

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No large studies are done to evaluate the cost of diabetic complications in our country with the exception of work done by Basit et All [8]. This study gives us an idea about the enormous amount of funds needed to treat only one of the complications of this disease. We need more and more local studies to show the control of diabetes and how far we are achieving the targets especially at a primary care level as this is directly related to the complication risk. The guidelines of target HBA1C have already been laid out as less than 7% by ADA[9] AACE[10] IDF[11]. We need to evaluate if getting the A1C level of different patients is really guiding us practically to change the treatment and helping us to achieve the target in our setup. The big question is that implicating the A1C values in our clinical practices is really changing our approach to implement different treatment or is it just a added financial burden to already burdened diabetic people. The idea is not to discourage the A1C levels done but to promote the practical use of A1C in changing the treatment modality if targets are not achieved.

METHODS

A cross sectional randomized observational study was done recruiting 156 patients from northern part of Lahore attending different primary care facilities. Their gender, age, duration of disease, modality of

treatments and A1C levels were studied. All type 2 diabetic patients irrespective of gender, age, BMI and duration of their disease having at least 1 HBA1C levels in previous 3-6 months, from the primary care facilities were included in the study. All patients who had attended Shalimar Hospital for the control of diabetes with chronic renal failure and advanced liver disease with type 1 diabetes mellitus and with gestational diabetes were excluded from the study.

RESULTS

The modality of treatment were broadly divided into patient taking insulin and patients taking oral anti-diabetic medications and it was noted that how many patients who were on full dose of oral anti-diabetic medications were switched on to insulin if their target A1C levels were not achieved, The frequency of Male to female gender ratio is almost 70 to 30 is this sample but it has been female dominance. The mean age in our patient group was 50.9 years and mean duration of disease is 82.9 months i.e., 6.9 years this shows that average patient is of long standing DM and had been to different primary care facilities in all these years and might have gone to medical out door departments of some tertiary care hospital but had never been treated in any tertiary care diabetic facility.

If we look at the level of control it seems very disappointing looking at their HBA1C levels it can be seems from the range of HBA1C that none of the patient in our sample has achieved target HbA1C and the min we came across was 8.1%. Whereas the max was 16.2 with a mean of 10.7%. These results are very disappointing and also a food for thought to improve the levels and therefore the out come of disease.

Another aspect of the results is that 64.7% of the patients are on OAD even with these HBA1C levels and thinking of the fact if these are much uncontrolled almost 100% of these patients need to be put on insulin if these are Uncontrolled. The results also showed that the patients who were on insulin although have not achieved targets but the level of achievement is better than that of those who are on OAD. Although small in number and representing mostly northern part of Lahore the results may be a reflection of control of diabetes in Pakistan or at least in Punjab.

This is very interesting picture as it is clearly seen that even the patient given insulin were not only adequately controlled but the mean HBA1C levels are even worst then those on OAD the reason for which is not the potential of insulin to decrease the A1C levels but the reasons could be multifactor It may be that those patients who were put on insulin have a longer duration of disease or there is fear of hypoglycemia in the mind of doctor and adequate dose of insulin was not used and a major factor could be non compliance and inadequate follow up and inadequate record keeping. All these factors need to be looked into if we want our patients to achieve adequate control.

Frequency distribution of gender of patients

Gender	Frequency	Percent
Female	108	69.2
Male	48	30.8
Total	156	100

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	156	24.00	77.00	50.9487	9.94747
Hba1c	156	8.10	16.20	10.7442	1.65815
Duration of disease in months	156	0	300	82.90	70.996

Valid N (list wise): 156

Comparison between OAD and insulin patients (n=156)

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
insulin not given	101	64.7	64.7	64.7
Insulin given	55	35.3	35.3	100.0

Descriptive statistics of patients who were given insulin Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Hba1c	55	8.10	8.10	16.20	11.1673	1.69990
Valid N (list wise)	55					

Descriptive statistics of patients who were not given insulin Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Hba1c	101	7.70	8.10	15.80	10.5139	1.59662
Valid N (list wise)	101					

DISCUSSION

The objective of all the international guidelines which are so far developed by international authorities is to reduce the risk and thereby burden of the complications which are the hallmark of diabetes. Although there are different individual variations in target HBA1C, but a general agreement is to bring the target down to 6.5%. While treating diabetes it is mandatory to keep the target in view. We as a treating doctors need to know the available modalities of treatment and there A1C lowering potential[12,13]. We should also know that what is the time to step up the existing treatment and what is the time to initiate or step up to other treatment. The clinical inertia of shifting the patent to step up treatment exists all over the world but is very much more prominent in the area of our patient sample. It is a well known fact that the HBA1C lowering potential of any OAD in mono therapy is not more than 2%[14] and in our patent the mean HBA1C was 10.7%. The max HBA1C was 16.2% and if we use OAD in this patient sample as mono-therapy we will not be able to reach the target in our patients.

It is proven by UKPDS[15] that diabetes is a progressive disease and no matter which therapy are we using there is a problem in control in progressive years because of beta cell dysfunctions. It is further stressed that the data of patients need to kept accessing their previous HBA1c levels and later adjusting the dose or stepping up accordingly and we strongly think that this is a missing link in primary care practices

It is worth to mention that for Type 2 diabetic patients Insulin is safe and effective to start by generalist physicians in patients who have poor control of diabetes[16].

It has also been indicated in study that there has been a decline of HBA1c levels by 0.5 to 1% in Germany and UK in patients who were on non Insulin treatment wit hHBA1C levels of 8.1±1.3% over 12 months and also was helpful in maintaining the same levels[17]. While adjusting the therapy and deciding the targets one may keep in mind that complication pattern and risk at which level of HBA1c these complication develop are subject to variation and this is shown in a large study including 20,330 patients done in Malaysia[18]

In our study we selected the patients who came to us from primary care facilities and the level of control was not satisfactory. Health care professional pharmacists and physicians are significant factors in increasing the effectiveness of diabetes care[19] esp. in the primary care. The guide lines and education should be providing regularly to primary care facilities.

Asking for HBA1C levels by the primary care facilities need to optimize under requesting will compromise the care and over requesting will put further financial burden on diabetic community[20]. A study done at Turkey in 2011 that diabetes intensive education program for the patients is helpful to decrease the HBA1C levels[21] and we need to introduce these types of models in our community and centers to control diabetes.

Finally it is not easy to achieve good glycemic control over the years in these patients. Looking at different studies and analysis and even in developed countries like USA the ideal control can not be achieved in all patients and the practical scenario is far less than ideal[22]. It is important to consider what anti diabetic treatment is selected to control both pre and post meals levels to achieve the HBa1C targets[23].

A lot need to be done and all resources need to tapped to achieve the target in our diabetic population otherwise we are going to see a huge disease burden and its complications which will further translate into financial burden and lead to further deterioration in the country financial crisis.

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