Introduction
Diabetes has become a major health problem in India with the largest number of diabetic patient burden in the world. It is estimated that, this disease will assume epidemic proportions during the first quarter of the 21st century and by the year 2025, >75% of people with diabetes will reside in developing countries, as compared with 62% in 1995. We evaluated the clinical utility of HbA1c as the base line investigation along with plasma glucose estimation in hospitalized patients for diagnosis of diabetes mellitus.

Methods:
A total of 400 patients of more than 25 yrs were tested. All the patients were evaluated by a random plasma glucose estimation, plasma glucose fasting and 2h after 75 g of glucose and HbA1c.

Result:
Fasting plasma levels varied from 82mg/dl to 216 mg/dl A total of 11 patients had plasma glucose values in the diabetic range (>126mg/dl) Plasma glucose in these patients ranged from 129 to 216 mg/dl. Patients with diabetes had higher HbA1c levels than subjects without diabetes. We found that an HbA1c value =>6.5% was 100% (11/11) specific for the diagnosis of diabetes.

Conclusion:
HbA1c correlated well with fasting plasma glucose values. In clinical settings, this test would be preferred as a first line test for diagnosis of diabetes in our country as it is convenient for the patient.

Keywords: Diabetes mellitus, HbA1c, Plasma Glucose Measurement.
82mg/dl to 216 mg/dl A total of 11 patients had plasma glucose values in the diabetic range (>126mg/dl) Plasma glucose in these patients ranged from 129 to 216 mg/dl. There was no significant age, sex, or admitting diagnosis differences between the diabetes and nondiabetes groups. Random plasma glucose values varied from 80 to 180mg/dl. There was no difference in the random plasma glucose values in both categories of patients. Patients with diabetes had higher HbA1c levels than subjects without diabetes. We found that an HbA1c value =>6.5% was 100% (11/11) specific for the diagnosis of diabetes.

Discussion
For many years, blood glucose levels have remained the standard tests for diagnosis of diabetes. Estimating glucose values have problems of collection of a fasting sample. According to WHO, diabetes is diagnosed if the (venous) fasting plasma glucose (FPG) value is >= 126 mg dl, or if the casual plasma glucose value is >=200 mg dl, or if the plasma glucose value 2 hours after a 75g oral load of glucose >= 200 mg dl. Intermediate categories i.e. Impaired fasting glycemia (>=110 and <126mg/dl) and Impaired Glucose Tolerance (F, 126mg/dl, >=140mg/dl). In asymptomatic subjects, performing the test on one occasion is not enough to establish the diagnosis (i.e. basis to treat diabetes). Patient has to come back on another occasion for the test (3).

HbA1c is a simple test for glycated haemoglobin and reflects glycemic control over the last six to eight weeks. International expert committee recommends A1C assay for the diagnosis of diabetes as it is an accurate, precise measure of chronic glycemic levels and correlates well with the risk of diabetes complications.

Many studies in western literature, have advocated the use of HbA1c for diagnosis of diabetes (5, 6, 7). When both FPG and A1C were measured, a stronger correlation was found between A1C and retinopathy than between fasting glucose levels and retinopathy (7). Studies that have assessed glycemia with A1C or with single or longitudinal measurements of glucose levels have consistently demonstrated a strong correlation between retinopathy and A1C (8).

In this study HbA1c levels have correlated well with fasting glucose values. In high risk groups this could well become the method of choice for diagnosing diabetes, as it reflects on glucose metabolism over a long period. The HbA1c level was useful in differentiating between patients with and without diabetes. Patient compliance may be better if only one sample is taken. HbA1c is a handy test which can help in early diagnosis of diabetes by testing a large number of people. This can be obtained at any time and requires no patient preparation.

We evaluated Hba1c in asymptomatic individuals. Selection of patients was risk based so as to detect maximum patients. We tested admitted patients as it was easier to assess the risk, minimize preanalytical variables and collect the sample. All patients who were diagnosed as diabetics by Fasting Plasma Glucose could be diagnosed by HbA1c.

Limitations of this study were the small sample size. We also did not evaluate the prediabetic state as that was out of the scope of study. Further studies are required to test costeffectiveness of the test for its use in screening of patients.

Conclusion
This study was aimed at evaluating the utility of HbA1c in diagnosing diabetes in admitted patients in our hospital. HbA1c correlated well with fasting plasma glucose values. In clinical settings, this test would be preferred as a first line test for diagnosis of diabetes in our country as it is convenient for the patient. Further large scale studies are required, with evaluation of cost effectiveness to include this as a diagnostic criterion for diagnosis of diabetes.

Reference


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