

# Study of HbA1C level in diabetic patient in Tertiary care hospital

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## ***Abstract: -***

*A global endemic, diabetes is becoming more and more common in both developed and developing nations. Glycated hemoglobin (HbA1c), a potential replacement for hemoglobin A1c, has been suggested by the American Diabetes Association. Diabetes diagnosis using fasting blood glucose. The capability of reflecting cumulative glycemic history of the previous three months makes HbA1c an essential biomarker of long term sugar control. HbA1c not only offers a trustworthy indicator of chronic hyperglycemia but also has a strong correlation with the likelihood of consequences from diabetes. Additionally, HbA1c identified the stand-alone risk factor for persons with or without diabetes for coronary heart disease and stroke. A single HbA1c test's valuable information has made it a trustworthy biomarker for the diagnosis and prognosis of diabetes.*

***Keywords:*** hyperglycemia, cumulative, diagnosis, biomarker, potential

**Introduction:-**

Hemoglobin (Hb) that has been chemically bonded to a sugar is known as (glycohemoglobin, HbA1C. Also known as A1C informally with patients. When present in a human's bloodstream, monosaccharides like glucose, galactose, and fructose spontaneously (i.e., without the use of enzymes) link with hemoglobin. However, glucose has a lower likelihood of doing so than galactose and fructose (13% compared to 21% for galactose), which could help to explain why glucose is used as a main fuel in human beings. [1][2]

**HbA1C test:-**

A1C percentage that is up to 5.6% or lower is considered to be normal. If it is above 5.7% to 6.5%, may be prediabetic and higher than 6.5% means a diabetic.

To assess how well blood sugar is being managed, doctors typically advise the following additional tests: two blood sugar measurements: random and fasting, the measurement of glucose in urine.[3]

**Ways to lower A1C level:-**

- Taking the medication on time
- A healthy and balanced diet
- Seek the help of a clinical nutritionist
- Move body parts
- Regularly monitor the blood sugar
- Track the progress[4][5]

**HbA1C test employs:-**

A1C testing for diabetes and prediabetes is advised by the Centers for Disease Control (CDC) if you are over 45, are more likely to acquire diabetes before age 45, or have symptoms.[6]

**HbA1C reporting:-**

- Normal: A1C under 5.6%
- Prediabetes: A1C between the 5.6% and 6.5%
- Diabetes: A1C 6.7% or higher than that[7]

**Diabetes management:-**

A1C tests for diabetes should be performed at least twice in a year, or a more frequent medication is changed or medical problems exist. Discuss with the physician how frequently it is correct.

If the A1C result can be shown as estimated (eAG), are the same as those shown on a glucose meter.

A1C %.		eAG mg/dl
7	-	152
8	-	180
9	-	214
10	-	243

### **Affect:-**

- A number of things, such as kidney damage, liver illness, or anemia, can artificially raise or lower an individual's A1C level.
- A less frequent kind of hemoglobin that individuals with blood diseases and those of Africans, Mediterraneans, or Southeast Asians origin may have.
- A few drugs, such as some HIV treatments and opioids.
- Loss of blood or blood exchange.
- Pregnancy condition.

### **Diabetes Patients' HbA1c Target Levels:-**

A number of variables go into determining a person's desired A1C level.

Each individual has a different optimal aim. If a patient has diabetes, the a goals A1C level could depend on any of the following factors: age, general health, whether or not a patient is pregnant, history of diabetes, suggested treatment strategy, and any complications from diabetes.[8][9]

### **Benefits of HbA1C test:-**

- No need of preparation
- No special diet to follow
- Convenient and time saving

### **Limitations of the HBA1C test:-**

A person with severe diabetes should not undergo a hemoglobin a1c blood test. The readings of HbA1c are not impacted by blood sugar levels.

Additionally, a person identifies whether hypoglycemia or hyperglycemia is present or absent.  
[10]

Additionally, certain illnesses, such as:

- Anemia and heavy alcohol consumption
- The thalassemia
- Infection with Sickle Cell

### **Discussion:-**

An examination of your hemoglobin levels can reveal your blood sugar levels during the previous three months. A form of sugar is glucose. Blood that is derived from food that has been consumed. In people with diabetes, either their bodies do not make enough insulin or their cells do not utilize it well. Cells don't receive enough glucose as a result. Consequently, your blood sugar levels automatically rise.

### **Conclusion:-**

The HbA1c test, which can provide immediate findings and is accurate and simple to perform, can be a useful tool for diagnosing diabetes, particularly in average income nations and citizens that are difficult to reach. Although HbA1c is approved for the indicative of diabetes, various testing methods and cutoff values are still up for controversy in the majority of the world's nations. The diagnostic precision of these separate tests is, however, markedly improved by the combination of FGT and HbA1c. The predictive potential of HbA1c is based on its exceptional capacity to evaluate retrospective glycemic management and forecast the lipid profile in sugar patients. due to the outbreak. As the prevalence of sugar levels increases globally, the HbA1c test may be used more frequently as a diagnostic and predictive tool, improving patient care and achieving positive clinical outcomes.

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