

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال الله تعالى

**قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ
الْحَكِيمُ }**

صدق الله العظيم

سورة البقرة الآية 32

Dedication

To my mother.....

To my fathers spirit.....

**To my
brothers.....**

**To my
sister.....**

**To my
friends.....**

**And
my colleagues...**

**I dedicate this work with my
best wishes to all.**

Acknowledgements

All my thanks are in the name of Allah, the most Gracious and the most Merciful.

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Abstract

The aim of this study was to assess fasting blood glucose as monitoring of long term diabetes compared to HbA1c.

A comparative cross sectional study was carried at El Emteaz Specialized Diabetic Centre during July to September 2013.

Thirty three patients age ranged between 22-78 years (17 male), with diabetes were enrolled in this study. Fasting blood glucose (FBG) was collected three times from each patient one-week apart and measured; by the end of the month HbA1c was measured.

Fasting blood glucose and HbA1c was not influenced by age, sex and duration.

This study showed mean fasting blood glucose (MFBG) to be strongly correlated with HbA1c ($r = 0.815$; $p = 0.000$).

According to this study results mean fasting blood glucose could be used as long term diabetic control.

المقدمة

هدفت هذه الدراسة لتقييم جلوكوز الدم الصيامي (FBG) كمقياس لمدي تنظيم سكر الدم مقارنة بالهيموكلوبين المجلکز (HbA1c). وقد أجريت دراسة مقطعية للمقارنة في مركز الامتياز التخصصي لمرضي السكري في الفترة من يوليو إلى سبتمبر 2013. و قد أخذت العينات من 33 مريض تتراوح أعمارهم ما بين 22-78 (17 ذكور) و شملت هذه الدراسة مرضي السكري. تم قياس مستوي جلوكوز الدم الصيامي (FBG) ثلاث مرات و كان الفرق بين كل قراءة و الأخرى إسبوع و عند نهاية الشهر تم قياس الهيموكلوبين المجلکز (HbA1c). مستوي الجلوكوز في الدم (FBG) والهيموكلوبين المجلکز HbA1c لا يتأثران بالعمر , الجنس. ومدة المرض. أظهرت هذه الدراسة أنه توجد علاقة قوية بين متوسط مستوي جلوكوز الدم الصيامي (FBG) و الهيموكلوبين المجلکز (HbA1c) عند مستوي الدلالة $\alpha = 00.00$ و قيمة $r = 0.15$ أثبتت هذه الدراسة أنه توجد علاقة بين مستوي جلوكوز الدم الصيامي (FBG) والهيموكلوبين المجلکز (HbA1c). تبعا لنتائج دراستنا متوسط جلوكوز الدم الصيامي يمكن استخدامه كمؤشر لتنظيم السكر علي المدي الطويل.

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List of Abbreviations

AACE	American Association of Clinical Endocrinology
ADA	American Diabetes Association
ATP	Adenosine Triphosphate
CAP	College of American Pathologists
CV	Coefficient of Variation
DCCT	Diabetes Control and Complications Trial
DM	Diabetes Mellitus
EDTA	Ethylenediaminetetraacetic Acid
FBG	Fasting Blood Glucose
FPG	Fasting Plasma Glucose
GHb	Glycated Hemoglobin
GDM	Gestational Diabetes Mellitus
HbA1c	Hemoglobin A1c
IDDM	Insulin-Dependent Diabetes Mellitus
IDF	International Diabetes Federation
IFG	Impaired Fasting Glucose
IGT	Impaired Glucose Tolerance
NADP⁺	Nicotinamide Adenine Dinucleotide Phosphate
NADPH	Nicotinamide adenine dinucleotide phosphate hydrogen
NCCLS	National Committee for Clinical Laboratory Standards
NGSP	National Glycohemoglobin Standardization Program

NIDDM	Non-Insulin-Dependent Diabetes Mellitus
OGTT	Oral Glucose Tolerance Test
SMBD	Self-Monitoring of Blood Glucose
T1DM	Type 1 Diabetes Mellitus
T2DM	Type 2 Diabetes Mellitus
UKPDS	United Kingdom Prospective Diabetes Study
WHO	World Health Organization

Sudan University for Science and Technology
College of Graduate Studies
Clinical Chemistry

Questionnaire

Name:

Serial No: ()

Telephone:

Age:

Sex: **Male** ☐ **Female** ☐

Residence:

Occupation:

Duration of diabetes mellitus:

Types of medication:

Investigations:

3 **Fasting blood glucose (1)** = **mg/dL**

4 **Fasting blood glucose (2)** = **mg/dL**

5 **Fasting blood glucose (3)** = **mg/dL**

6 **Mean Fasting blood glucose** = **mg/dL**

7 **HbA1c** = **%**

Date:

Signature: