Dedication

To my mother……

To my father……

To my brothers……..

To my sisters……

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.

In this instance, I extended my thanks, deep sincere gratitude and honest appreciation to my supervisor Prof. Abdel Hafiz Khattab, Department of Pathology, Faculty of Medicine, University of Khartoum, for his kindness, good guidance, valuable direction and generous advice that has kept me on the right track. I am indebted to his kind cooperation.

Sincere thanks are also extended to Prof. Mahadi, Consultant Endocrinologist, for his good guidance.

I am also grateful to all staff of Jabir Abuliz Specialized Diabetic Centre especially the laboratory staff.

My thanks are also extended to my colleagues in the Clinical Chemistry Department, Faculty of Medical Laboratory Science, Sudan University.

My thanks are also extended to Elimam Elmahadi University.

I feel indebted to many people who participated and helped me in this work.

Abstract

The aim of this study was to determine the relationship between fasting blood glucose and HbA1c among diabetic patients.

A comparative cross sectional study was carried at Jabir Abuliz Specialized Diabetic Centre during November to December 2008.

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

This study showed mean fasting blood glucose (MFBG) to be strongly correlated with HbA1c ($r = 0.655$; $p = 0.000$).

The study found significant correlation between fasting blood glucose and HbA1c. Fasting blood glucose and HbA1c was not influenced by age and sex.

□□□□□□□ □□□□□□

هــدفت هـذه الدراسـة لتحديـد العلاقـة بيـن مسـتوي جلوكـوز الـدم الصيامي (FBG) و الهيموقلوبين المجلكز (HbA1c) لمرضي السكري.

و قـد أجريـت دراسـة مقطعيـة للمقارنـة فـي مركـز جـابر أبـوالعز التخصصي لمرضي السكري في الفترة من نوفمبر إلي ديسمبر 2008 .

وقد أخذت العينات من 33 مريض تتراوح أعمارهم ما بين 22-78 (17 ذكور) و شملت هذه الدراسة مرضي السكري.

ثلاث مـرات و كـان (FBG) تم قياس مستوي جلوكوز الدم الصيامي الفـرق بيـن كـل قـراءة و الأخـري إسـبوع و عنـد نهايـة الشـهر تـم قيـاس الهيموقلوبين المجلكز (HbA1c).

أظهرت هذه الدراسة أنه توجد علاقـة قويـة بيـن متوسـط مسـتوي جلوكـوز الـدم الصـيامي (FBG) و الهيموقلـوبين المجلكـز (HbA1c) عنـد مستوي الدلالة 00.00 = α 0.655 = ر و قيمة .

أثبتت هذه الدراسة أنه توجد علاقة بين مستوي جلوكوز الدم الصيامي (FBG) و الهيموقلـوبين المجلكـز (HbA1c) . مسـتوي الجلوكـوز فـي الـدم (FBG) و HbA1c لا يتأثران بالعمر و الجنس.

Contents

Chapter Two

Chapter Three

Chapter Four

Chapter Five

List of Tables

List of Figures

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