Epidemiologic Study Of
Insulin-Dependent Diabetes Mellitus
(IDDM)
Among Secondry School Students
In Heliopolis District

Thesis Submitted for Partial Fulfillment
of The Master Degree in Paediatrics

By

Maher Sobhi Assad Girgis

(M.B.,B.Ch.)

Under Supervision of:

Dr.: Mona Salem
Assist. Prof. of Paediatr.
Faculty of Medicine
Ain Shams University

Dr: Mahmoud Radwan
Lecturer of Public Health
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
(1987)

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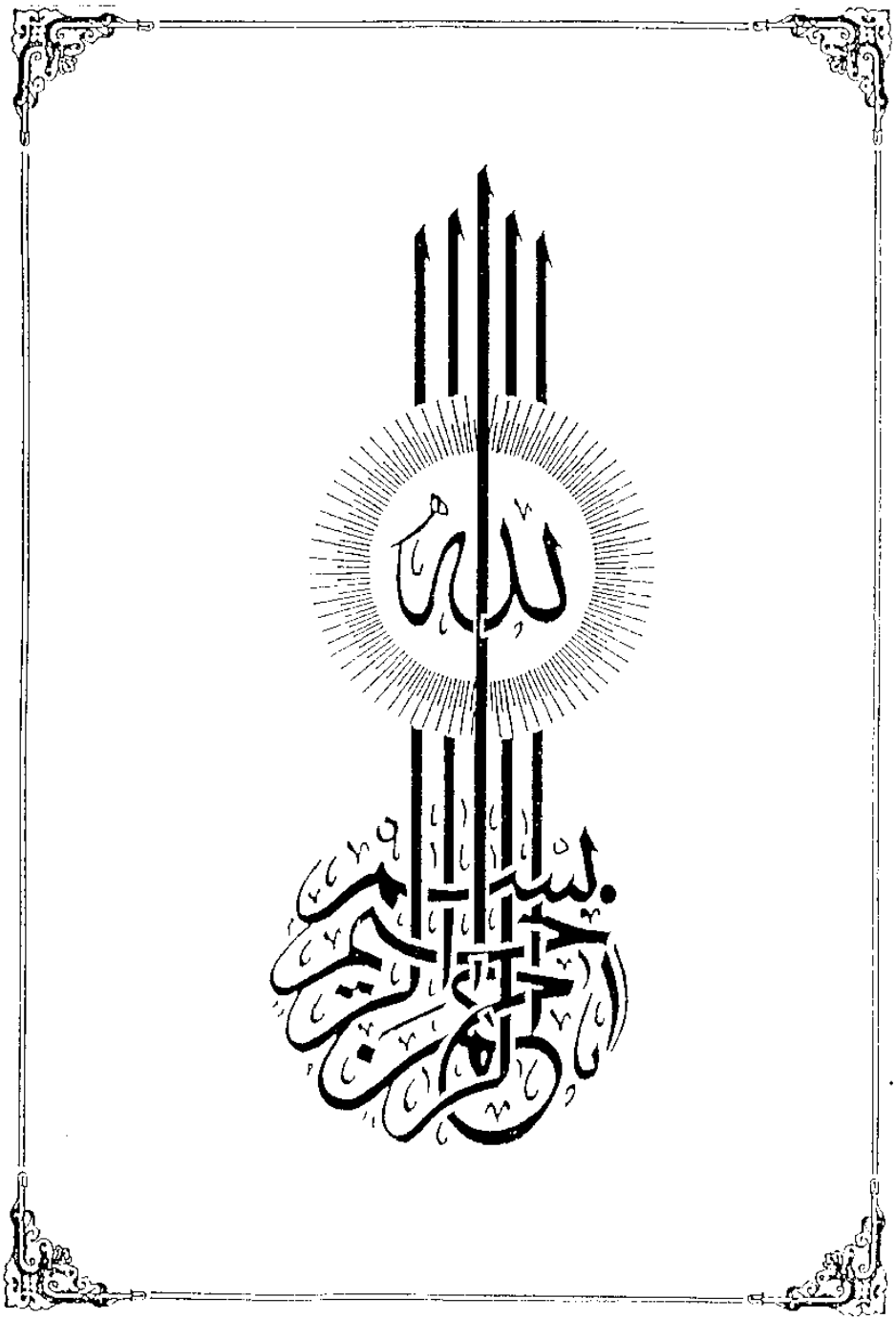

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LIST OF ABBREVIATIONS

D.M.	:	Diabetes mellitus
GDM	:	Gestational diabetes mellitus
HLA	:	Human leucocyte antigen
ICA	:	Islet cell antibodies
ICCA	:	Islet cell cytoplasmic antibodies
ICSA	:	Islet cell surface antibodies
IDDM	:	Insulin-dependent diabetes mellitus
IGT	:	Impaired glucose tolerance
MRDM	:	Malnutrition related diabetes mellitus
NDDG	:	National Diabetes Data Group
NIDDM	:	Non-insulin-dependent diabetes mellitus
OGTT	:	Oral glucose tolerance test
Pot.AGT	:	Potential abnormality glucose tolerance
Prev.AGT	:	Previous abnormality glucose tolerance
WHO	:	World Health Organization

INTRODUCTION & AIM OF THE WORK

Introduction and Aim of The Work

Diabetes mellitus affects large number of people of all social conditions throughout the world. The personal and public health problem of diabetes, already of vast proportions , continues to grow despite of exciting advances in the few years in virtually every field of diabetes mellitus research and patient care (e.g. improved treatment, protection against complications, increased self-care, and even primary prevention of some forms of diabetes) (WHO, 1985).

Diabetes mellitus is the commonest endocrinal and metabolic disease in childhood (Drash, 1975 and Tattersall and Fohnston, 1981). The evidence which establishes diabetes mellitus as a heterogenous group of independent diseases has been reviewed recently. Within this group, insulin-dependent type of diabetes mellitus (IDDM) stands as a nosological entity in its own characteristic clinical picture, distinctive pathological findings in the islet of Langerhans and particular genetic and immunological features (Zonna et al.1976).

Epidemiological studies indicate high rates universally, but little is known of the real extent of diabetes and its sequelae in developing countries. Mortality data grossly underestimate the real magnitude of the problem (WHO, 1980).

At least 30 millions people are involved throughout the world and the number of cases reported are increasing rapidly with the aging of the populations, changes in life style and improvement in ascertainment. Despite of insulin therapy, the complications of D.M. as metabolic abnormalities, microangiopathy and macroangiopathy are still devastating sequelae of this syndrome. So, it becomes imperative to define and evaluate prevalence of D.M., especially among children since it is the age category which is likely to suffer from and manifest most of the incapacitating complications of diabetes.

Epidemiological studies on IDDM may through light on possible causal factors in the etiology and pathogenesis of the disease, as suggested by previous work, (Bloom et al.1975). Environmental factors may play an important role in the etiology of juvenile onset D.M. (Tattersall and Pyke, 1972).

Epidemiological studies from U.S.A.(MacMillan et al.1977), England (Bloom et al.1977) and Denmark (Christau et al.1977) showed a mean annual incidence in Caucasians ranging from 6 to 13.2 per 100,000 (West et al.,1979).

In Egypt, few surveys were conducted to know the prevalence of IDDM in certain areas, for certain age groups, using different diagnostic criteria (questionnaire, urine testing, blood samples). Some authors used hospital data only (Gabr and Abdel Salam, 1962). Some of these surveys were conducted in Monira hospital, and Ain Shams Hospital (Saleh, 1981).

A new case finding method using questionnaire was conducted in Al-Ahram, Giza district among school children with a prevalence of 25.8 per 100,000 (El-Bayadi,1983).

These data indicate that IDDM in developing countries, is not rare as it has been thought (Ghaly et al.,1985a).

Hence, the purpose of this study is to determine the prevalence rate of IDDM among Egyptian secondary school-age adolescents in Heliopolis district, at the academic year 1986/1987. New case findings among secondary school students of the age group 15-18 years is also our aim.

REVIEW OF LITERATURE

Diabetes Mellitus:

* Definition :-

What is diabetes mellitus ?. A single clear answer can not be given, but a generalization is that it is a grouping of anatomic and chemical problems resulting from a number of factors in which an absolute or relative deficiency of insulin or its function usually is present. It tends to run in families; is associated with accelerated atherosclerosis, and predisposes to certain specific microvascular abnormalities including retinopathy, nephropathy and neuropathy

In the untreated state, D.M. is recognized by chronic elevation of the concentration of glucose in the blood (hyperglycemia). This is sometimes, accompanied by symptoms of severe thirst , profuse urination , weight loss and stupor, culminating in coma and death in the absence of effective treatment (WHO, 1985).

Characteristically, diabetic has a long-term risk of developing progressive disease of the retina and kidney, damage to the peripheral nerves and aggravated atherosclerosis of the heart, legs and brain. The severity of symptoms is largely determind by the degree to which the insulin action is deficient.

* Classification of D.M. :

During the last decade , the growth of knowledge regarding the etiology and pathogenesis of diabetes has led many individuals and groups in the diabetes community to express the need for a revision of the nomenclature , diagnostic criteria and classification of D.M., seeking an international consensus if possible.

To accomplish this task , an international workgroup was convened on April 27-28,1978, under the sposorship of the National Diabetes Data Group (NDDG) of the National Institute of Health (NIH) of U.S.A.

There has been general acceptance of the classification adopted by the WHO Expert Committee on D.M. in 1980; however , a number of valuable comments and suggestions have since been made. These have now been incorporated into the classification, and the revised version is given in table (I) (WHO,1985).

The most important change from the previous classification is the appearance of malnutrition-related diabetes mellitus as a major clinical subclass, ranking with insulin-dependent diabetes mellitus and non-insulin-dependent diabetes mellitus.

The classification includes the following clinical classes:

. Diabetes mellitus [characterized by either fasting hyperglycemia or levels of plasma glucose (PG) during an oral glucose tolerance test (OGTT) above defined levels].

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. Impaired glucose tolerance (PG levels during an OGTT that lie above normal but below those defined as diabetes).

. Gestational diabetes. (NDDG,1979).

Table (I):-

Classification of diabetes mellitus and allied categories of glucose intolerance.(Quoted from WHO, 1985).

Class	Former Terminology
A. Clinical classes:	
1.Diabetes Mellitus :-	
a- Insulin-dependent diabetes mellitus (IDDM),Type I	Juvenile diabetes, juvenile-onset diabetes, ketosis-prone diabetes, brittle diabetes.
b- Non-insulin-dependent diabetes mellitus (NIDDM) Type II : - Non-obese NIDDM - Obese NIDDM.	Adult-onset diabetes, maturity-onset diabetes, ketosis-resistant diabetes.
2.Malnutrition-related diabetes mellitus. (MRDM)	
3.Other types of diabetes associated with certain conditions and syndromes:	Secondary diabetes.

Table (I): cont...

Class	Former Terminology
* Pancreatic disease. * Disease of hormonal etiology. * Drug-induced or chemical-induced conditions. * abnormalities of insulin or its receptors. * Other types.	
4. Impaired glucose tolerance (IGT) a- Non-obese IGT b- Obese IGT c- IGT associated with conditions and syndromes.	Asymptomatic diabetes, chemical diabetes, subclinical diabetes, border-line diabetes.
5. Gestational diabetes mellitus (GDM).	Gestational diabetes

B. Statistical risk classes:

(Subjects with normal glucose tolerance, but substantially increased risk of developing diabetes)

1. Previous abnormality of glucose tolerance (Prev AGT).
2. Potential abnormality of glucose tolerance (Pot AGT).