1 / / /

ENVIRONMENTAL FACTORS AND METABOLIC CHANGES IN EGYPTIAN ADULT OBESE FEMALES

Ву

Mohamed Hafez Mohamed Hathout M.B., B.Ch., D.P.H.

THESIS

Submitted to the Faculty of Medicine,
Ain Shams University in Partial Fulfilment
of the Requirement for the Medical Doctor
Degree of Public Health and Community Medicine

bill M. M. Supervisors

20543

Prof. Dr. ALY MASSOUD

Professor & Vice Dean of Faculty
of Medicine, Ain Shams University

Prof. Dr. FAWZY GADALLA
Professor of Community Medicine,
Al-Azhar University

Prof. Dr. AHMAD DAKROURY
PROFESSOR & Chairman Department
of Nutritional Biochemistry and
Metabolism, Nutrition Institute, Cairo.

Ain Shams University

1984

Approval Sheet

Name : MOHAMED HAFEZ MOHAMED HATHOUT

Title: ENVIRONMENTAL FACTORS AND METABOLIC CHANGES

IN EGYPTIAN ADULT OBESE FEMALES.

This Thesis for Ph. D. degree has been approved by:

Profo_Dr. ALX MASSOUD_

Porf. Dr. RIFKI FARYS

Prof. Dr. OSMAN GALAL

Committe in Charge

Date: 5/11/1984.



ACKNOWLEDGEMENT

Sincere gratitude and appreciation are due to Professor **Dr. Aly Massoud,** Professor and Vice Dean of Faculty of Medicine, Ain Shams University for his help, guidance and supervision.

Sincere gratitude and deepest appreciation are due to Professor **Dr. Fawzi Gadalla,** Professor of Community Medicine, Al-Azhar University for his kind help, guidance and supervision.

Deepest appreciation and cordial thanks are due to Professor Dr. Ahmad Dakroury, Professor and Chairman Department of Nutritional Biochemistry and Metabolism, Nutrition Insitute, Cairo for his kind help by time, effort and spirit.

Sincere thanks are extended to Professor **Dr. Rifki Faris** Chairman Department of Community, Environmental and Occupational Medicine, Faculty of Medicine, Ain Shams University for his interest and kind help.

Thanks are also extended to **Dr. Ahmad Khalifa** Professor of Occupational Medicine, Ain Shams University for his kind help.

Deepest appreciation and cordial thanks are also due to **Dr. Ahmad Abdel Kareem,** Assistant Professor of Occupational Health,

National Research Centre. Dokki, Cairo, **Dr. Abdel Aziz Abdel Galeel, Dr. Mohamad Abdel Moneim and Dr. Abdel Moneim Darwish,** Lecturers

of Nutritional Biochemistry, Nutrition Insitute, Cairo and **Dr. Mohsen Gadalla,** Lecturer of Community Medicine, Ain Shams University for their help in the laboratory work and statistical analysis.

I would like to express my sincere appreciation to Prof. Dr. Hekmat E. Aly, Prof. of Nutrition and Former Director of the Nut. Inst., Cairo, and to Prof. Dr. Osman Galal Director of Nutr. Inst., Cairo, for their encouragement & help.

I would like also to express my appreciation to my wife and family for their patience and help.

Special gratitudes and thanks go to all who helped me by time, effort and spirit in Faculty of Medicine, the Scientific Computer Centre, Ain Shams University and Nutrition Institute, Cairo.

Contents

Chapter		Page
I	Introduction	2
	Review of Literature	3
ΙΙ	Aim of the Work	53
ΤΤΙ	Material and Methods	54
I V	Results and Findings	66
v	Discussion	124
VI	Conclusion & Recommandations	141
VII	Summary	144
VIII	References	148
	Appendices	170
IX	Arabic Summary	188
v	Aranic Simulato	

List of Tables

Table	<u>Title</u>	Page
(1)	Distribution of subjects among different age categories	73
(2)	Distribution of subjects according to marital status	7 4
(3)	Distribution of subjects among different physiological categories	75
(4)	Number of pregnancies among subjects	76
(5)	Distribution of subjects according to household size	77
(6)	Distribution of subjects according to level of education	78
(7)	Distribution of subjects among different occupation	79
(8)	Distribution of subjects according to categories of income	80
(9)	Skinfold thickness according to overweight categories	8 1
(10)	Mean arm circumference according to overweight categories	83
(11)	Type of work in relation to obesity	86
(12	Daily frequency of meals of normal, overweight and obese attendant women	86

<u>Table</u>	<u>Title</u>	Page
(13)	Distribution of subjects according to time of main meal	87
(14)	Distribution of subjects according to meals outside home	88
(15)	Distribution of subjects according to cause of outdoor meal	89
(16)	Distribution of subjects over the food items they like	90
(17)	Distribution of subjects over the food items they dislike	91
(18)	Average Daily Calorie Intake of Obese Women Compared with RDA and available percaput calorie supply according to FBS. 1980	92
(19)	Average daily Nutrient Intake of obese Women	93
(20)	Percent of Calories Contributed by the major nutrients	95
(21) Distribution of subjects according to number of cigarettes smoked per day	98
(22) Distribution of subjects according to use of oral contraceptive pills	99
(23) Family history concerning obesity	100

Table	Title	<u>Page</u>
(24)	Distribution of subjects according to family history concerning obesity	101
(25)	Causes of visits to clinic	103
(26)	Frequency of clinical findings	104
(27)	Prevalence of hypertension in normal and obese subjects	105
(28)	Effect of different dietary regimens on weight reduction of female obese individuals	109
(29)	Effect of level of education on the follow up attendance of obese women	111
(30)	Distribution of subjects by cause of visit	112
(31)	Initial serum lipid levels in obese women	116
(32)	Relationship between degree of obesity and serum lipid levels	117
(33)	Serum phospholipids levels in different age groups	118
(34) Serum triglycerides levels in different age groups	119
(35) Serum cholesterol levels in different age groups	120
(36) Effect of weight reduction on serum lipids levels of obese women	121

List of Figures

Figure	<u>Title</u>	<u>Page</u>
(1)	The metabolism of fat in the body	35
(2)	Skinfold thickness according to overweight categories	82
(3)	Mean arm circumference according to over-weight categories	84
(4)	Source of calories in the average daily diet of obese women	94
(5)	Percent of calories contributed by major nutreints compared to the FBS (1980)	96
(6)	Percent of calories contributed by major nutrients compared to FBS (1980)	97
(7)	Prevalence of hypertension in normal and obese subjects	106
(8)	Weight reduction in different dietary regimens	110
(9)	Relationship between degree of serum lipid levels	122
(10)	Effect of 10% weight reduction on serum	123

Introduction

Prior to the twentieth century, obesity was valued as a mark of affluence, beuty and health. Overeating and consequent overweight is now often regarded as a behaviour maladjustment. Insurance companies contend that overweight clients are higher risk because obesity is directly or indirectly associated with a wide variety of diseases that collectively account for 15-20% of the mortality rate (Powers, 1980).

Obesity is one of the most common nutritional disorders in present-days especially in developed (Davidson and Passmore 1969) and fast developing countries (Richards et al. 1974).

In developed countries approximately 35% of adult population are obese and there are indications that the prevalence is increasing (Powers, 1980). The 1959 "Build and Blood pressure study" which describes weights of 5 million people found that men in the United States weigh 1 - 5 pounds more than previously recorded studies while women weigh 2 - 6 pounds less. In Britain Jelliffe and Jelliffe in 1975 found young and middle-aged men 15 pounds heavier than 30 years preceding the study with only slight increases in height.

Review of Literature

- 2 -

Definition of Obesity

Obesity can be defined as an excessive accumulation of fat in the storage areas of the body (Davidson and Passmore, 1969).

Goodhart and Shills (1973) define obesity as a pathological condition characterized by an accumulation of fat much in excess of that necessary for optimal body function.

Hirschand Knith (1970) define it as an excessive accumulation of triglyceride fat in the adipose organ.

McLaren (1972) defines obesity as adiposity in excess of that consistent with health.

Mann (1976) states that obesity has been defined as 20% in excess of desirable body weight.

Montegriffo (1968) defines overweight as a weight greater than the mid point of the weight range given in the tables for the largest frame.

So we can define obesity as an undesirable condition characterized by excessive accumulation of triglyceride fat in certain areas of the body which may lead to or aggravate diseases.

Epidemiology

The distribution of obesity is described in terms of the personal characterestic of those affected, for example their sex, age, residence, marital status, family structure, occupation, socio-economic status..... etc (Barker, 1973).

Geography:

Obesity is one of the most common nutritional disorders. Its presentation is world-wide. It prevails more in developed than in developing countries (Christakis, 1973 and Richards et al., 1974). One-third of the population is estimated to be overweight with an associated decrease in life expectancy (Powers, 1980).

Moore (1962) found in a study carried in New York city that 57.6% of men and 42.1% of women were obese (15% \geq ideal weight).

Silverstone (1969) found in a study carried in London in 1969 on 329 persons that 37% of men and 49% of women were obese on the criterion that obesity is 20% ideal weight.

In Lagos, Nigeria Johnson found in 1970 that 8.3% of men and 35.7% of women were obese (15% > ideal weight).