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A THESIS ON

THE PATTERN OF SKINFOLD THICKNESS MEASUREMENT AMONG EGYPTIANS

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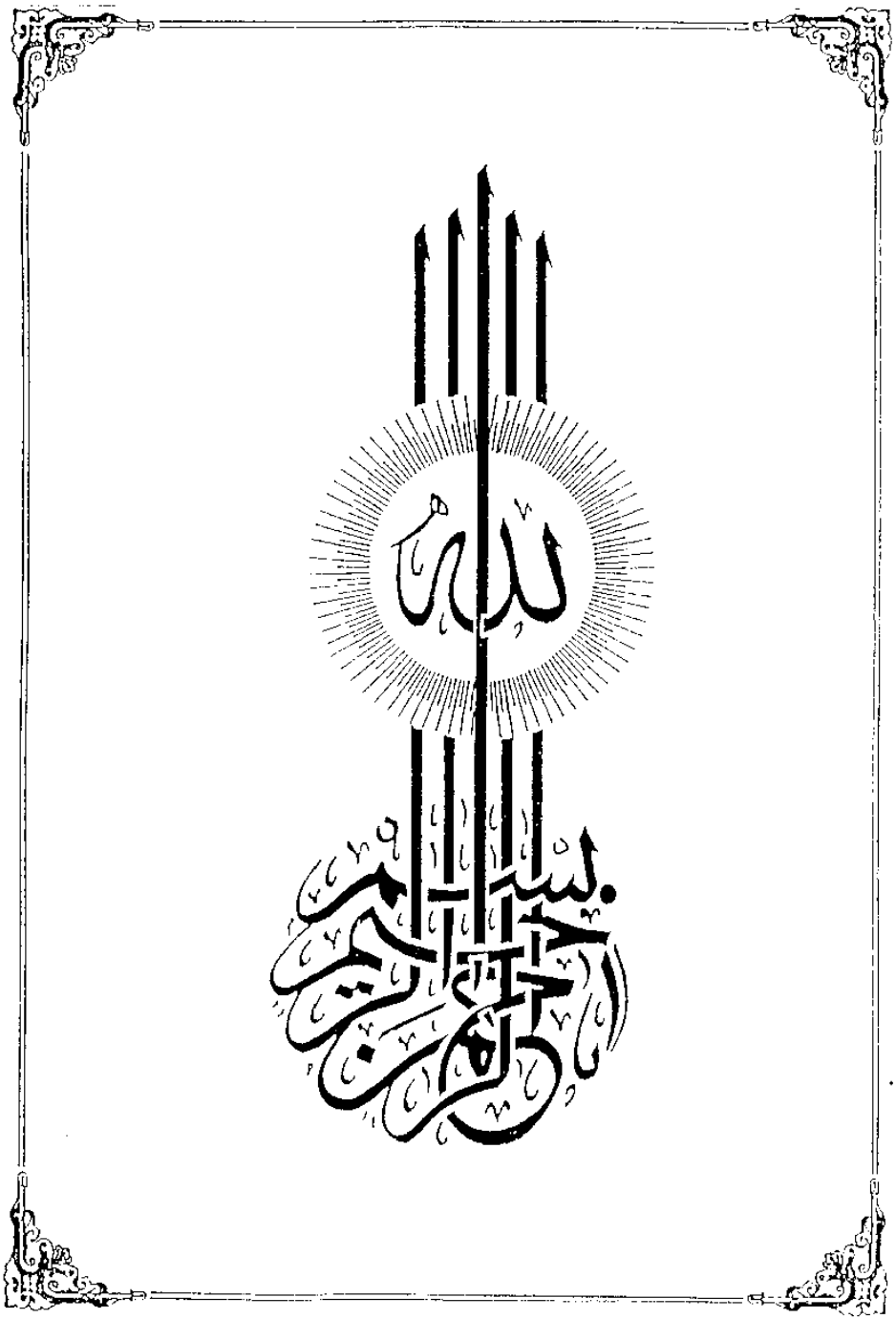

C O N T E N T S

INTRODUCTION

and

AIM OF THE WORK

Introduction and Aim of the work

Obesity is well known as excess fat deposition all over the body specially in the subcutaneous layer.

It is the most prevalent, chronic medical condition associated with a variety of diseases that account for 20% of the mortality rate all over the world.

In developed countries, approximately 35% of the adult population is obese, and the prevalence is increasing. This may be attributed to many factors such as sedentary life, readily available high caloric and high-fat foods, as well as cultural, endocrinal, metabolic and psychological factors.

However, fat is essential for survival and the evolutional development of man.

The energy is stored by 2 ways:

1- Small amounts of carbohydrates are stored as glycogen to be catalyzed to glucose and lactic acid without oxygen use in case of emergency.

2- Fat storage.

For each gram of glycogen, 3 to 4 gms of water must be stored,while fat is stored without water. So the energy is mainly stored as fat, otherwise a 180- pound man

with 30 pounds fat would weigh 900 pounds if a corresponding amount of energy stored had been as glycogen.

However, the normal amount of fat content depends, in part, on the environment so that persons making long trips involving a long duration of starvation need more energy to be stored.

Therefore, the criteria upon which we can diagnose obesity must be clear; because inspite that persons who are grossly overweight are usually overfat, this is not necessarily the case. Some overweight as athletes are underfat. Also some sedentary underweight subjects are overfat. So, measures that estimate body fat rather than just weight must be used. The most accurate way to estimate the standard body built is the relation between skinfolds and the metropolitan measurements.

The aim of this work is to map the skinfold thickness measurement in the different age decades among Egyptians to assess the magnitude of this health problem in our country; and to detect the most representative skinfold to be measured in each age group of both sexes.

LITERATURE REVIEW

Obesity

Definition

Various definitions of obesity were proposed. However, it was defined as fatness beyond a level consistent of good health both of mind and body, as well as the socially acceptable norms (Vague et al., 1974).

A public health service publication on obesity stated : "Obesity is a bodily condition characterized by an excessive generalised deposition and storage of triglycerides as fat in adipose organs beyond the normal levels expected for height, age and sex" (Hall et al. 1969).

Similarly, obesity was defined as a bodily state in which there is excessive accumulation of fat in both the relative and absolute senses; therefore the total body weight is abnormally high, besides a greater percentage of body fat is entailed (Cyril, 1974).

Hager (1981) defined obesity as an abnormal growth of adipose tissue due to enlargement of fat cell size (hypertrophic obesity), increase in fat cell number (hyperplastic obesity) or a combination of both.

Clinically, obesity can be regarded as a degree of excess adiposity that imparts a health risk.However,

it was estimated that an excess of body weight of 20 percent over the ideal body weight imparts a health hazard. (Jerrold, 1983).

In terms of the most useful anthropometric measurements called the body mass index (BMI) that equals weight/height^2 (when weight is measured in kilograms and height in meters); Obesity is defined as BMI of greater than 27 for men and 25 for women. The figures closely correspond to 120 percent of the ideal body weight (Edwin and Jules, 1981).

According to the Life Insurance data, the Framighan study of the non insured population and the survey of the American Cancer Society, the range of weight/height^2 between 20-25 is associated with minimum risk of early death in both men and women. These figures correspond to 12-22% increase of body weight as fat in male adults and 22-30% in adult females.(Garrow, 1987).

For children a weight more than 20% above the standard weight for height, age and sex is taken as a state of obesity. (Morris and Chinn, 1981), (Dietz and Gortmaker, 1985), (Stark and Lloyd, 1986).

Weight, Overweight and Obesity

Weight is defined as quantity of heaviness or relative heaviness. Overweight means a state of body weight in excess. Obesity denotes an excess of body fat. (Young, 1972).

Thus, a person is considered overweight if his body weight is above the desirable level but not high enough to represent an excess of body fat. (Guthrie, 1986).

A person can be described as overweight, obese or severe obese when his weight is above 10%, 15% and 25% of his optimal weight for height respectively. (Young, 1972).

Overweight,in itself,especially in small amounts does not necessarily imply overfatness since the variable elements of bone, organ and muscle masses as well as fat contribute to the total weight. The classification of a person as obese should involve an estimate of his fatness as well as the relation of his weight to some chosen standard. (Brozek, 1957).

In 1987, Millar and Stephens defined overweight as a Quetelet Index (weight in Kilograms/height^2 in meters^2).

Geographical Distribution of Obesity

Obesity is considered to be one of the most prevalent medical and public health problems. (Seidell et al., 1986).

However, there are no comparative international statistics but the observant traveller can notice more obese people in the streets of some countries than others.

Some studies have compared samples of people in two or more countries using standard procedures for weight, height and skinfold thickness measurement (Davidson et al., 1979).

United States:

Food is very important to most Americans (Jelliffe and Jelliffe, 1975).

In USA obesity became wide spread.A substantial proportion of individuals are overweight and the prevalence is on the increase. Some studies show that 5% - 39% of the Americans are obese. (Glass et al., 1981) and (Jeffery et al., 1984).

It was found that 12% have a body mass index above 30 kg/m² (Bray, 1985).

A steady increase in body fat was observed among the U.S. population from childhood through adolescence. This increase is obviously marked in females than in males, particularly in the subscapular skinfold - a measure of trunk fat - than in the triceps which indicates limb fat. (Johnston, 1985).

Among the American children of the Mexican race aged 3 and 4 years, 50% are 100% or more of expected weight for height, while, only 13.2% of the children are 110% or more of expected weight for height. (Dewey et al., 1983).

In New York City, 3% of boys and 4% of girls have a relative weight greater than 130% during adolescence. (Peckham, 1983).

In Boston, 10% of school children are obese. (Johnson et al., 1956).

Goldblatt et al.,(1965)found a higher prevalence of obesity in both boys and girls from lower classes.

In Iowa, 15% of the 9 years-old girls and 2% of the 9 years-old boys are obese; while 45% of the 16 years-old girls and 15% of the 16 years-old boys are obese (Hathaway and Sargent, 1962).

Only 15% of children aged from 6 to 16 years are

obese. (Jelliffe and Jelliffe, 1975). While in adults, the prevalence of obesity vary with age and sex. (Powers, 1980).

It was found that obesity is more prevalent with advancing age. For the Americans, there is a rise in the prevalence of obesity in both white and black men between the ages of 25 and 55 years. Thereafter, the prevalence of obesity begins to fall off in both races. Between the ages of 35 and 55, obesity is more common among black men than among white men; 29% of men aged 50-59 years are overweight and 34% are obese. In contrast to the pattern shown by the American men, the prevalence of overweight in white women increases steadily until the age of 65 years after which it begins to level off. After the 3rd decade, 45% of women are overweight and 23% are obese. The prevalence of obesity in black American women increases rapidly from 30% at 25 years of age to 60% at 45 years. The prevalence of obesity among black women was found to be double that among white women in the same age group. (Van Itallie, 1985).

Europe:

Surveying studies in the European Continent

showed that obesity is common in all countries. The high prevalence of obesity in Europe is similar to that present in other industrialised areas. Prevalence is higher in rural areas than in the urban. Men in Southern Europe are more obese than those in Northern Europe. In Southern Europe, which includes Italy, Greece and Yugoslavia, the rate is 23.1% among males. In Northern Europe, which includes Finland and Netherland, the rate is 13% among males.(Kluthe and Schubert, 1985). In Western Europe 2-6% of school children are obese.(Jelliffe and Jelliffe, 1975).

In Austria, the incidence of obesity does not differ between the two sexes until the age of 40. After this age, the prevalence increases rapidly among women if compared with the rate among men. Therefore, the prevalence of obesity in males is ranging between 13.7% and 27%, while, it is 17.6 to 41% among females. In adolescent age, the prevalence decreases again in both sexes although it is greater in women than in men. (Kluthe and Schubert, 1985).

In the Fedral Republic of Germany, the rate of obesity is 16.3% among males and 18.2% among females, while,in the German Democratic Republic,the rate is 16% in males and 41% in females.(Kluthe and Schubert,1985).