Role of Family Doctor
In Management and Prevention of Obesity

Essay

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Family Medicine

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بناء على موافقة الجامعة بتاريخ / ٥ / ٢٠٠٧ تم تشكيل لجنة الفحص ، المناقشة للرسالة المذكورة أعلاه على النحو التالى :-

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List of Abbreviations

ATLPL	Adipose Tissue Lipoprotein Lipase
BMI	Body Mass Index
CT	Computed Tomography
FAO	Food and Agricultural Organization
FFM	Fat Free Mass
GB	Gastric Bypass
HBP	High Blood Pressure
HCG	Human Chorionic Gonadotropins
HDL	High-Density Lipoprotein
HDL-C	High Density Lipoprotein Cholesterol
HIV	Human Immunodeficiency Virus
IDDM	Insulin-Dependent Diabetes Mellitus
IHD	Ischemic Heart Disease
JIB	Jejunoileal Bypass
LDL	Low-Density Lipoprotein
MRI	Magnetic Resonance Imaging
NASH	Non-Alcoholic Steatohepatitis
NCD	Noncommunicable Disease

NES	Night Eating Syndrome
NGO	Nongovernmental Organization
NIRI	Nearinfrared Interactance
PAI-1	Plasminogen Activation Inhibitor of Endothelial Type I
T1DM	Type 1 Diabetes
T2DM	Type 2 Diabetes
TBEC	Total Body Electrical Conductivity
TSH	Thyrotropin
VBG	Vertical Banded Gastroplasty
VLCD	Very Low Caloric Diet
VLDL	Very Low-Density Lipoprotein
WHR	Waist: Hip Ratio

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INTRODUCTION

The term Obesity derives from the Greek expression: ob-edere, which means overeating. For centuries, it was considered a matter of gluttony, or craving for food, No longer, many obese patients are rejected by a society that tends to believe that the reason they are obese is because they are unable to control what they eat. Obesity, like fever and anemia, is a symptom rather than single disease entity; a variety of causes for obesity have been identified in humans and laboratory animals **(WHO, 2003)**.

The World Health Organization describes the “escalating global epidemic” of obesity as “one of today’s most blatantly visible - yet most neglected - public health problems” **(WHO, 2004)**.

An expert panel organized by the National Institutes of Health in 1998 recommended the use of the Body Mass Index (BMI) to define and classify obesity **(National Institutes of Health, 1998)**.

The number of overweight and obese children in the world is growing at a phenomenal rate. On the whole, kids are spending less time exercising and more time in front of the TV, computer, or video game console. And today's busy families have fewer free moments to prepare wholesome, home-cooked meals, day in and day out. From fast food to electronics, quick and easy seems to be the mindset of many people, young and old, in the new millennium **(WHO, 2003)**.

But in the overwhelming majority of patients the etiology of obesity cannot be determined; Since the underlying causes are poorly understood, it follows that no effective treatment has been developed so far; This is unfortunate, because obesity is a very common disorder, shortening the life-span of millions of people around the world during the past fifty years; Unlike

a fever, where a rise in temperature to above 100.4ºF or 102.2ºF indicates the possibility of an underlying clinical disease, obesity is more difficult to characterize. **(WHO, 2003)**.

Obesity is associated with increased mortality rate and risk factors such as hypertension, hyperlipidemia and diabetes mellitus. **(Dickerson & Carek, 2000)**.

Obesity accounts for 2-6% of total health care costs in several developed countries; some estimates put the figure as high as 7%. The true costs are undoubtedly much greater as not all obesity-related conditions are included in the calculations **(WHO, 2003)**.

Developing nations such as Thailand, Brazil, and Egypt were also experiencing rising numbers of child obesity **(The Daily Mail, 2001)**.

Changing dietary habits through counseling (mainly to reduce energy and fat intake) can lead to weight loss, as a rule 3 kg to 10 kg during the first year (or 10% of body weight in children), Regular exercise contributes to weight reduction, Behavioral therapy in conjunction with changes in diet and exercise can improve results if the supportive interventions are continued for a longer period, The Weight Watchers approach achieves a permanent loss of 10% or more of starting weight in about 20% of those who attend all sessions. **(Östman et. al., 2004)**.

Aim of the work

The aim of this work is to:

- Give an essential scientific background to the family doctor about obesity, assessment, & management.
- Explore the role of family doctor in management and prevention of obesity.

Epidemiology of Obesity

Definition

Obesity is usually defined by an indirect measure of body fat, the body mass index (weight (kg)/ (height (m)^2), The World Health Organization defines overweight as a body mass index of 25.0-29.9 and obesity as a body mass index >30 **(WHO,1998)**&**(Garrow, et al, 1999)**.

For research purposes the total amount of fat in the body can be estimated by measuring the body density and calculating the lean body mass. The body is immersed up to the neck in water and the amount of water displaced is measured. Another method of estimating total body fat is by measuring total body water or potassium, as fat contains neither water nor potassium. The depth of the fat can also be calculated by ultrasonic methods **(Durnin and Womersley, 1974)**.

Clinical obesity is shown by an excess of subcutaneous fat, 9 to 13.6 kg (20 or 30 lb) of which can easily be masked by normal indoor clothing. Except for short-term research projects there is no need to measure the thickness of skin folds by instruments and the diagnosis can best be made by estimating the thickness of the subcutaneous fat by pinching a skinfold in the mid triceps area, below the scapulae, on the lower part of the chest wall, the abdomen, the supraileal area, the buttocks or thighs. Up to 2.54 cm (1 in) is usually regarded as normal. Tables have been produced by which total body fat can be estimated from skinfold thickness **(Durnin and Womersley, 1974)**. In men, large amounts of fat may be stored in the greater omentum and the only obvious clinical evidence of excess weight is sometimes therefore an expanding waist-line. The waist measurement in men correlates well with the amount of body fat **(Björntorp, 1997)**. Where the weight is 10 percent above the desirable weight for estimated frame size as shown by the Metropolitan Life Insurance Tables, the clinical diagnosis of obesity is rarely in doubt. The experienced clinician will not be misled by the increase in weight due to edema fluid or excessive muscular hypertrophy, Excessive obesity can be said to be present

when the weight is 20 per cent above the desirable weight, but some take 30 per cent as the figure, Obesity is defined as weighting 20 % or more above the ideal body weight for person's height and skeletal frame **(Richard, et. al., 2002)**.

According to the relative body weight which is defined as the body weight divided by standard weight that is based on the patient height. Obesity exists when the relative weight is 20% greater than the desirable **(Gray, 1989)**.

Classification of obesity

Obesity can he classified in several ways, including the anatomic characteristics of adipose tissue, the age at onset of obesity and etiologic factors **(Bray, 1989)**.

CLASSIFICATION by **(National Institutes of Health, 1998)**: *Table 1*

Today, over 50 scientific and medical organizations have endorsed the *National Institutes of Health* clinical guidelines supporting the use of BMI to define and classify obesity.

Table 1. Classification of Obesity

WHO Classification	***Popular Description***	***BMI (kg/m²)***	***Risk of co-morbidities***
Underweight	Thin	<18.5	Low (but risk of other clinical problems increased)
Normal range	Normal	18.5 - 24.9	Average
Overweight		> 25.0	
Pre-obese	Overweight	25 - 29.9	Increased
Obese Class I	Obese	30.0 - 34.9	Moderate
Obese Class II	Obese	35.0 - 39.9	Severe
Obese Class III	Morbidly Obese	> 40.0	Very severe

Another aspect of classifying obesity according to body fat distribution was taken using the waist to hip ratio (WHR) which is determined by measuring the minimum waist circumference and the maximum hip circumference in the standing position. WHR higher than 0.85 defines upper body obesity **(Kaplan, 1989)**.

Upper body obesity is associated with high morbidity and mortality from congestive heart disease and cerebrovascular accidents in both men **(Larsson et. al., 1984)** and women **(lapidus et. al., 1980)**.

Furthermore, abdominal obesity is associated with important risk factors for atherosclerosis as hyperinsulinemia, hypertension, hypertriglyceridemia and low HDL cholesterol levels and glucose intolerance **(Kissebah et. al., 1982)**.

Another classification of obesity can be according to the age of onset, Obesity can begin at any age. Birth weight is not predictive for subsequent development of obesity later in life; the first appearance of obesity is in infancy. Obesity in the first year of life is due to increase fat cell size with no measurable increase in fat cell number. This type of obesity is relatively a poor guide to the likelihood of becoming obese latter **(Hagger et. al., 1977)**.

The second period of childhood obesity is between 4-11 years, and is associated with an increase in the number of fat cells and is life long.

In females, the central event is pregnancy; the woman who becomes pregnant will be several kilograms heavier two years after pregnancy than woman who did not get pregnant, for men, the transition from the active life style associated with teenage years to more sedentary style of the early adult years is associated with weight gain, a rise of body weight continues through adult life years until the sixth decade **(Bray, 1989)**.

Hypertrophic obesity is associated with an increase of fat cell size and usually occurs in adult life or during pregnancy **(Bray, 1989)**.

Android obesity is characterized by thick skin folds over the nape of the neck and is common in males, while the gynoid type is common in females and characterized by thick skin folds over the sacrum and the thigh **(Vague, 1986)**. It tends to correlate with android fat distribution and often is associated with metabolic disorders as glucose intolerance, hyperlipidemia, hypertension, and coronary heart disease **(Haffner et. al., 1987)**.

Central adiposity is associated with high triglyceride levels and low levels of high density lipoprotein cholesterol (HDL-C) **(Despres et. al., 1985)**.