

Obesity: a Rationale Approach for a Family Physician

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Introduction

Obesity is rapidly becoming a major public health problem. The health implications of obesity are so serious that it has been designated a leading cause of preventable death (second only to smoking) in the US¹. WHO in 1997 declared obesity as posing serious threat to public health due to increased risks of related co-morbidity including hypertension, coronary artery disease and type 2 diabetes mellitus². It is not a difficult condition to recognize and can be best treated in the context of the patient's family and environment.

Definition

Obesity can be defined as an excessive body fat content. Body Mass Index (BMI: the body weight in kilograms divided by the square of the height in meters).

Measurements of waist circumference or the ratio of the waist to the hip circumference provide information about fat distribution, which is an important factor, in the co- morbidity associated with obesity, as greater risks are associated with an abdominal distribution of fat (a large waist circumference, 'apple shaped' than with a peripheral distribution pear- shaped⁴.

Current evidence suggest that abdominal obesity, previously described by Jean Vague, a French physician in mid forties as " android obesity" carries a major risk for cardiovascular complications as compared to accumulation of fat in the gluteo-femoral region commonly found in premenopausal women described by him as "gynoid obesity"⁵.

Studies using Imaging techniques such as magnetic resonance imaging (MRI) and computed tomography (CT) that can distinguish between intra-abdominal or visceral fat depot from subcutaneous abdominal fat, reveal waist circumference as a predictable anthropometrics marker of the amount of visceral fat⁵..

Etiology

The cause of obesity is multi-factorial, with a strong influence by modifiable and preventable environmental factors, however, there is no doubt that obesity is also influenced by genetics⁶. The pattern of inheritance is polygenic, and with the identification of the leptin genes, many other single genes have been investigated, and studies are underway to scan the loci associated with obesity. Obesity is commonly associated with the development of various diseases (Table).

Table. Relative risks of health problems commonly associated with obesity³.

Greatly increased (relative risk >3)	Moderately (relative risk 2-3)	Slightly increased (relative risk 1-2)
Diabetes mellitus type 2	Coronary heart disease	Cancer (breast cancer in postmenopausal women, endometrial cancer, colon cancer)
Gallbladder disease	Hypertension	Reproductive hormone abnormalities
Hyperlipidemia	Osteoarthritis (knees)	Polycystic ovary syndrome
Insulin resistance breathlessness	Hyperuricemia (gout)	Impaired fertility Low back pain due to obesity
Sleep apnoea		Increased risk of complications during anaesthesia Fetal defects associated with maternal obesity

Prevalence

Obesity has increased steadily in certain countries since 1900. In the UK in 1994, it was estimated that 13% of men and 16% of women were obese⁷. The prevalence of obesity in the US has increased from 12.0% in 1991 to 17.9% in 1998⁸.

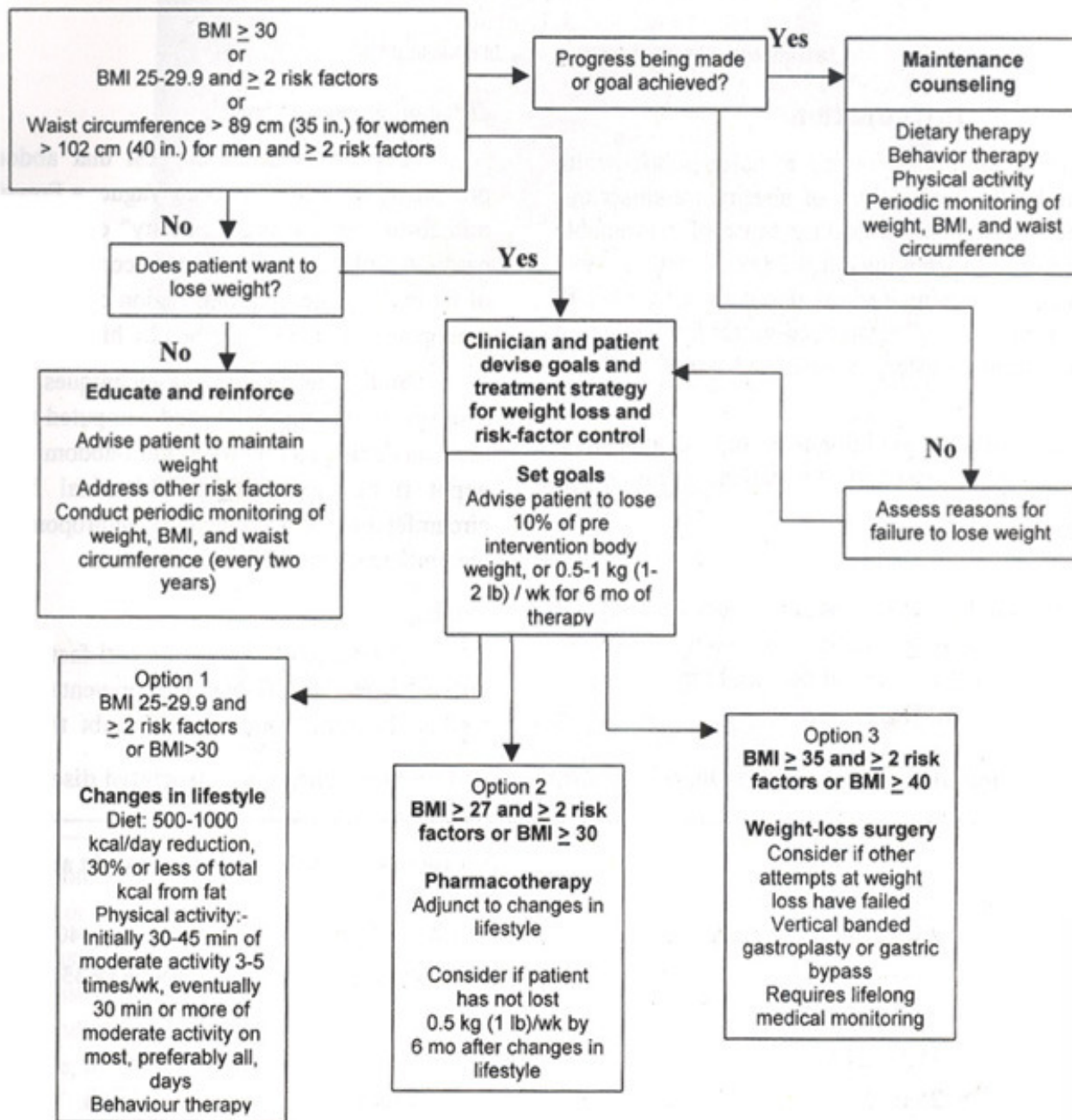
In Pakistan levels of obesity tend to increase with age. It has been found to be more common among females, 40 percent of urban women 45-64 years of age are obese. Among the 25-44 years age group 9 percent of rural males are obese as compared to 22 percent urban males, whereas 14 percent of rural females of the same age group were obese as compared to 37 percent of urban females⁹. The prevalence of obesity for children 5-14 years is not documented. Hypertension and Diabetes Mellitus are highly prevalent among obese and overweight Pakistanis. In Pakistan circulatory diseases cause

over 100,000 deaths a year, 12 percent of all deaths annually⁹.

Evaluation

In clinical practice obesity can be determined by using two methods, one is to estimate the ideal body weight by using the BMI table, the other more accurate is the measurement of adiposity by measuring skin fold thickness through the use of calipers. By testing the skin fold

Algorithm for the Management of Obesity¹⁵



thickness at predetermined anatomical points, the examiner can estimate the ratio of adipose tissue to lean body mass. Skin fold thickness is very helpful in long-term counseling in weight reduction because it directly measures the adipose tissue.

Obesity in the abdominal areas carries the greatest risk. In men, the risk of waist/hip ratio (waist circumference divided by hip circumference) is a risk factor for ischemic heart disease, diabetes, stroke and death. In men, the risk increase significantly when the waist/hip ratio rises above 1:1, and in

women when it is above 0.8:1. This is independent of total body fat mass⁵.

Screening

A close relation between accumulation of visceral adipose tissue and plasma insulin and apolipoprotein B has been reported⁶. A ‘triad’ of atherogenic risk markers have been identified. Fasting hyperinsulinemia, increased apolipoprotein B concentration, and an increased low density lipoprotein particles (abnormalities found in viscerally obese men, even in the absence of type 2 diabetes mellitus), are important factors.

Accumulation of visceral fat can be estimated by anthropometrics indices and waist circumference is a useful measurement not only to predict accumulation but also to monitor its change over time.

Simple screening variables, such as waist circumference and fasting triglyceride concentration can identify high risk obese men who would be carriers of the atherogenic triad. This has been defined as “Hypertriglyceridemic waist” a new clinical phenotype defining high risk form of obesity. A cut off value of waist measurement > 90 cm and triglyceride concentration > 2 mmol / L characterizes this phenotype⁵.

Approach to management

Obesity should be considered a disease. A family physician must realize that several steps need to be taken to help obese patients lose weight. Counseling and convincing in losing weight is the hallmark of any strategy adopted. Obese patients needs support and positive reinforcement throughout the weight loss process.

Health education about the medical consequences of obesity and nutritional information is important. The family physician also needs to work with the individual in setting goals and sub goals. Including family members in the treatment plan can work as a good source of positive reinforcement. Family physicians need to be aware of various approaches to management.

The approaches towards management include non-pharmacological as well as pharmacological.

Systematic reviews and Randomized Controlled Trials (RCT) have found that a combination of advice on diet and exercise, supported by behavioral therapy, is more effective in achieving weight loss than either diet or exercise alone¹⁰. A low energy, low fat diet is the most effective lifestyle intervention for weight loss. One systematic review and five randomized controlled trials have found that most strategies that involve personal contact with a therapist, family support, multiple intervention, or are weight focused appear to be most effective¹¹.

Classification of Overweight and Obesity by BMI, Waist Circumference and Associated disease risk * 3

	BMI(kg/m ²)	Obesity Class	Disease risk * Relative to normal weight and waist circumference	
			Men ≤ 102 cm (≤ 40 in) Women < 88 cm (≤ 35 in)	>102 cm (>40 in) >88 cm (> 35 in)
Underweight	< 18.5		--	--
Normal	18.5 - 24.9		--	--
Overweight	25.0 -29.9		Increased	High
Obesity	30.0 - 34.9	I	High	Very High
	35.0 - 39.9	II	Very High	Very high
Extreme Obesity	≥40	III	Extremely High	Extremely High

* Disease risk for Type 2 diabetes, hypertension, and CVD

+ Increased waist circumference can also be a marker for increased risk even in persons of normal weight³

Pharmacological treatments involve a number of drugs that includes centrally acting drugs such as Phenylpropanolamine, Phentermine, Mazindol, Diethylpropion, Fluoxetine, Dexfenfluramine, Fenfluramine, Fenfluramine plus phentermine and the newer drugs Orlistat and Sibutramine. Phenylpropanolamine, phentermine, mazindol and diethylpropion result in modest weight loss in people more than 15% overweight. Serious adverse effects such as intracranial hemorrhage, acute psychotic reactions, hypertensive episodes and seizures preclude their prescription. Dexfenfluramine and combination of fenfluramine with phentermine have been associated with valvular heart disease and pulmonary hypertension¹². Two randomized controlled trials found limited and conflicting evidence comparing fluoxetine with placebo¹³.

Among the newer drugs Orlistat (Xenical) that binds to gastrointestinal lipases in the lumen of the gut, prevent hydrolysis of dietary fat (triglycerides) into absorbable free fatty acids and monoacylglycerols, when combined with a low calorie diet has shown to increase the weight loss in adults with obesity. Weight gain following discontinuation has not been reported. Oily spotting from the rectum and flatulence has been reported in 22-27% of people taking orlistat. Limited evidence from six RCTs suggests that sibutramine (Reductil) an inhibitor of both norepinephrine and serotonin reuptake and weak inhibitor of dopamine reuptake, can increase weight loss in healthy adults with BMI between 27-40 kg/m²¹⁴.

Selected patients with a body mass index of at least 40 or less along with obesity related medical conditions can benefit from bariatric surgical treatments, such as gastric bypass¹⁵.

Many approaches can be used in combination, and long-term lifestyle change should be the ultimate goal of management. With the identification of high risks associated with obesity, family physicians should treat by focusing on therapeutic targets.

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