

NUTRITION

(Lecture 3)

OBJECTIVES

- 1. To describe the cholesterol content of different foods**
- 2. To describe the methods of body fat measurement.**
- 3. To describe body fat distribution.**
- 4. To define obesity.**
- 5. To define and describe abdominal obesity.**

CONTENTS

- 1. Cholesterol content of different foods**
- 2. Methods of body fat measurement.**
- 3. Body fat distribution.**
- 4. Obesity.**
- 5. Abdominal obesity.**

FAT CONSUMPTION AND DISEASE

Strong correlation exists between Coronary Heart Disease (CHD), blood cholesterol and fat consumption particularly saturated fat.

High fat consumption is also associated with cancer of colon and breast.

The main source of saturated fat in human diet is the meat of ruminants, dairy products and hard margarine. Cholesterol is found only in foods of animal origin.

FOODS RICH IN VARIOUS FORMS OF DIETARY FAT

Saturated Fat	Monounsaturated Fat	Polyunsaturated Fat
Beef	Olive oil	Corn oil
Pork		Sunflower seed oil
Lard		Safflower oil
Coconut oil		Soyabean oil
Butter		Cod liver oil
Cream		Menhaden oil
		Salmon oil

CHOLESTEROL CONTENT OF DIFFERENT FOODS

(< 100 MG/100 G)

Food	Cholesterol content (mg/100g)
Vegetables and Fruit	-
Bread and cereals	Trace
Cow's milk-skimmed	1
Cow's milk-whole	11
Meat, Beef, Chicken, Fish	60-70

CHOLESTEROL CONTENT OF DIFFERENT FOODS

(100-500 MG/100 G)

Food	Cholesterol content (mg/100g)
Cheese	100
Oysters	200
Butter	250
Liver	300
Kidney	375

CHOLESTEROL CONTENT OF DIFFERENT FOODS

(500-1000 MG/100 G)

Food	Cholesterol content (mg/100g)
Egg (whole)	550

CHOLESTEROL CONTENT OF DIFFERENT FOODS

(> 1000 MG/100 G)

Food	Cholesterol content (mg/100g)
Egg yolk	1500
Brain	2000

BODY FAT MEASUREMENT

1. **Measuring skin fold thickness at several sites: Biceps, Triceps, Supra-iliac by using a spring loaded caliper, and then applying the values to standard equations.**
2. **Underwater weighting.**
3. **Isotopic measurement of whole body K content-an index of lean (non-fat) mass.**
4. **Impedence analysis: difference in electrical resistance between lean tissue and fat.**
5. **Abdominal fat can be measuring using computed tomography (CT) or magnetic resonance imaging (MRI) scanning.**

BODY FAT DISTRIBUTION

TWO MAJOR TYPES OF BODY FAT DISTRIBUTION IN ADULTS

1. Gynoid (a 'pear' shape) distribution:

Characteristic of women. Fat storage occurs mainly around the hips and thighs. Associated with generalized obesity.

2. Android (an 'apple shape) distribution:

This is found in both sexes, although more common in men. Fat storage primarily occurs in the abdomen, called:

central obesity or **abdominal obesity** or **visceral obesity**

Normal Body Fat Contents:

10-20% in men

20-30% in women

OBESITY

- ❖ **Is a medical condition that is characterized by excess body fat.**
- ❖ **Obesity is defined simply as too much body fat.**

ASSESSMENT OF OBESITY

1. BMI:

- **Obesity:** $\text{BMI} \geq 30$

- **Body Mass Index (BMI)** =
$$\frac{\text{Wt (kg)}}{\text{Ht (m}^2\text{)}} \dots \dots$$

BMI GRADES

BMI	Condition
18.5 - 24.9	Acceptable range (Normal)
25.0 - 29.9	Over weight
30.0 - 34.9	Grade I obesity
35.0 - 39.9	Grade II obesity
≥ 40	Grade III obesity (Morbid obesity)

2. Ideal body weight:

The most common estimation of IBW is by the Devine formula.
In adults:

Male ideal body weight = 50 kg + 2.3 kg x (ht(in) – 60)

Female ideal body weight = 45.5 kg + 2.3 kg x (ht(in) – 60)

Ideal body weight: 100% of normal

Over weight: 101-119% of normal

Obesity: ≥120% of normal

ABDOMINAL OBESITY

Abdominal obesity can be checked by:

1. Measuring (W:H ratio):

W: waist circumference (cm):

Distance halfway between the superior iliac crest and the lower margin of the rib cage in the mid axillary line.

H: Hip circumference (cm):

Measured $\frac{1}{3}$ rd distance between superior iliac spine and the patella.

Hip circumference should be measured around the widest portion of the buttocks, usually at the level of the greater trochanters.

ABDOMINAL OBESITY

W:H ratio

A risk of abdominal obesity IF:

W:H ratio is **> 0.95** in Men

W:H ratio is **> 0.80** in Women

ABDOMINAL OBESITY

2. Waist circumference (WC) measurement:

WC alone might suffice to define risk associated with intra abdominal fat.

Gender	An increased risk	Substantial risk
Men	≥ 94 cm	≥ 102 cm
Women	≥ 80 cm	≥ 88 cm

3. Waist : Height Ratio:

- Abdominal fat, also, can be measured by measuring:

Waist : Height Ratio

(the ratio of waist circumference to height)

An increased ratio (> 0.5) indicate the presence of abdominal obesity, and increases the risk Cardiovascular Disease and its complications.

ABDOMINAL OBESITY

Diseases associated with abdominal obesity:

- ☐ Hypertension.
- ☐ Hyperlipidemia.
- ☐ Insulin resistance.
- ☐ Diabetes mellitus.
- ☐ Cardiovascular disease.