

# **Nutrition for weight Management**

**UCMS Semester 8, Batch 2016**

**Dr. Shikha Nayar**  
**Assistant Professor Clinical Nutrition**  
**Centre for Diabetes, Endocrinology and Metabolism,**  
**GTB Hospital.**

# Obesity

- **Overweight and obesity** are defined as abnormal or excessive fat accumulation that may impair health (WHO, Jan 2015).
  - The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. **Globally, there has been:**
    - an increased intake of energy-dense foods that are high in fat; and
    - an increase in physical inactivity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization.
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- **Adiposity** refers to distribution of fat in the body.
- **Android fat distribution:** excess of truncal abdominal fat gives the body an ‘apple-shaped’ appearance. Trunk to hip ratio is high. More common in men.
- **Gynoid fat distribution:** deposition of gluteo-femoral fat around hips and thighs gives a ‘pear-shaped’ appearance. Generally seen in women
- **Metabolic syndrome:** presence of disorders of insulin resistance, hypertension, hyperlipidemia, and android obesity is called metabolic syndrome.

# Assessment of Obesity- Classification of BMI (kg/m<sup>2</sup>)

**Body mass index (BMI)** is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m<sup>2</sup>) (WHO, Jan 2015).

Category	WHO (2004)	Asians
Underweight	< 18.5	< 18
Normal	18.5-24.9	18-22.9
Overweight	25.0-29.9	23.0-24.9
Obesity	≥ 30	> 25

WHO (2004), Misra (2009)

# Waist circumference

- Internationally accepted cut-off for waist circumference is 102 cms in men and 88 cms in women which are indicative of risk associated with obesity.
  - For Asians, the cut-off levels are  $\geq 90$ cm for men and  $\geq 80$  cm for women.
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# Waist-to-hip ratio (WHR)

- The cut-off values for WHR for men are 0.90 and 0.80 for women.
- Higher values than these places a person at a higher risk of developing obesity and other lifestyle disorders.
- Based on distribution of fat in the body, most people can be divided into two distinct categories:
  - **'Android' / Apple-shaped** - When more fat is deposited around the waist/middle portion of the body.
  - **'Gynoid' / Pear-shaped** - When more fat is deposited around hips and thighs is pear shaped or gynoid type.

# Skinfold thickness

- Since half or more of the body fat is subcutaneous, measurement of skinfold thickness has been used frequently to estimate fat and its distribution in the body.
  - Common sites for measuring skinfold thickness include: biceps, triceps, subscapular, suprailiac.
  - Percentage of subcutaneous fat increases with increasing wt.
  - Thickness of this subcutaneous fat can be measured at various sites using standardized skinfold callipers ( example - Harpenden's calliper).
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# Common Causes of obesity

- Genetic susceptibility
  - Dietary habits
  - Sedentary lifestyle
  - Other lifestyle factors - alcohol, smoking, sleep deprivation, stress
  - Hormonal imbalance
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# Medical Nutrition Therapy for Obesity

## 1. Assessment of the patient :

- Using the anthropometric tools like BMI, WC, categorize the patient for the degree of overweight and obesity.
  - Also take wt. history with family history of obesity.
  - Dietary history to be recorded.
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## 2. Goals of MNT for Obesity

- To bring about gradual weight loss
- To maintain a good nutritional status
- To bring about lifestyle modifications so as to maintain desirable body weight.

## 3. Nutritional Measures to achieve weight loss:

- **Energy:** Calculate Energy value of diet and its proportionate distribution for each patient individually.

- This can be done in following way:
  - Calculate the ideal body wt. (IBW) on the basis of weight and height.
  - Determine energy intake on basis of kcals for different activity levels and whether the individual is normal wt., obese or underweight.

Built	Women	Men
Medium	Allow 100 lbs (45.5 kg) for first 5 ft (152 cms) height, plus 5 lb for each additional inch.	Allow 106 lbs (48 kgs) for first 5 ft. (152 cms) of height, plus 6 lb for each additional inch.
Small	Subtract 10%	Subtract 10%
Large	Add 10%	Add 10%

- After determining energy intake required for the Ideal body weight of the person, the level of energy intake is adjusted individually to meet his/her weight reduction requirements.
- For example, a decrease of 500-1000 Kcals/day may be done to lose desired amount of weight according to the degree of overweight /obesity, in say a month or three months.
- **Protein:**  
**Approximately 20%** of the total calories in a day should come from protein. These should include good quality protein sources.

- **Fats:**

- Fats should provide only 20% or less of total energy.
- Emphasis must be laid on use of unsaturated fats so as to reduce risk of heart problems.
- Avoid fried foods and fast foods.

- **Carbohydrates:**

- Rest of the energy about 60% of total energy should come from carbohydrates.
- These are given in form of complex CHOs like husked grains, dals and cereals, fruits and vegetables.
- Simple form of CHOs like sugars to be limited.

- **Minerals and vitamins:**
  - Reducing diets should provide adequate amounts of essential nutrients like minerals and vitamins to maintain a good nutritional status.
  - Fruits and vegetables, should be included in plenty as they are low in energy and a good source of vitamins and minerals and provide dietary fibre.
- **Dietary fibre:**
  - Indigestible component of plant foods, never considered a source of energy, has recently been documented to provide 2 Kcals/g.

- Water soluble and some of water insoluble dietary fibre undergo fermentation in colon and yield short-chain fatty acids -butyric, propionic, acetic acids etc.
  - These fatty acids are used as a source of energy by liver.
  - In view of several health benefits of fibre, for adults, an intake of nearly 40g/day has been recommended.
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# Food exchange system

Function/ Food group	Major Nutrient	Food Exchange
Body building	Protein	Milk
		Meat
		Pulse
Energy giving	Carbohydrate & Fat	Cereal/starches
		Fat
		Sugar
Protective	Minerals, Vitamins & dietary fibre	Vegetables (excluding starchy vegetables)
		Fruits

# Physical activity

- Contributes to increase in energy expenditure and is helpful in reducing and maintaining desirable weight.
  - Reduces abdominal fat and increases bone density and cardiovascular fitness.
  - All adults must indulge in a minimum of 30-45 minutes of moderate intensity physical activity on all days of the week.
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- Brisk walk helps in reducing blood pressure, serum TG levels and elevates HDL cholesterol.
  - Aerobic exercises, strength training, stretching, etc.
  - Physical activity should be prescribed carefully keeping in view the person's abilities and comorbidities present.
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# Underweight

- Underweight is a condition when body wt. is 10-20% less than the average expected for one's height, age, gender.
- If the body wt. is less by 20% or more than IBW the individual is grossly underwt. and it is a matter of concern.
- **Goals of MNT:**
  - Restore body wt. to normal.
  - rebuild body tissues and nutrient stores and restore health.
  - maintain desirable body weight and a good nutritional status.

# MNT for underweight

- **Energy:** An increase of about 500-1000 kcals /day should be done gradually considering the appetite of the individual and wt. gain / week or month should be recorded.
- **Protein:** A high energy intake must be accompanied by a high intake of protein to build up the muscle tissue. A daily intake of 1.5 g protein/kg body wt.
- **Fats:** Although fats are energy dense foods and help reduce the bulk of the diet, they must be provided only in moderation so as to partly meet energy needs but not exceed tolerance limits.

## **Guidelines for healthy eating and lifestyle:**

1. Start the day with an early nutritionally balanced breakfast.
2. Aim to include at least 4-5 portions (3 veg, 2 fruits) of fruit and vegetables each day to increase dietary fibre
3. Take more of Green leafy vegetables, whole grains, salads with every meal
4. Avoid watching T.V. or any other stressful activity while eating food.
5. Low fat dairy products - low fat milk and its products should be taken instead of full fat/cream milk.

5. Read nutritional labels to eliminate fat sources and other not-so required additives
  6. Boil and steam vegetables rather than deep fry –cooking method
  7. Avoid fast foods and ready-to-eat food items that are processed and deep fried
  8. Avoid whole milk and its products, simple sugars, refined cereals, confectionary and baked items, red meats, egg yolks, salted nuts, namkeens etc.
  9. Regulate and reduce salt and sodium intake.
  10. Watch for food selection while eating out.
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Thank You

