



SNS COLLEGE OF NURSING
Saravanampatti (po), Coimbatore.

DEPARTMENT OF NURSING
COURSE NAME : BSC (NURSING) I YEAR
SUBJECT : NUTRITION
UNIT: III
TOPIC : ENERGY AND NUTRITION



INTRODUCTION



Nutrition is the science of food and its relationship to health how the human body uses food and processes the nutrients it contains to enable the body to perform functions.





DEFINITION



Energy is defined as the capacity to do work. Energy is the strength and vitality required for sustained physical or mental activity. Energy requirement is the amount of food energy needed to balance energy expenditure in order to maintain body size, body composition and level of necessary and desirable physical activity consistent with long term good health.





UNIT OF ENERGY



- The food energy is calculated as Calories or Kilocalories or Joules.
- One Kilocalorie is equal to 1000 calories.
- One Kcal is equal 4.186 Joules.
- One gram of protein or carbohydrate provides 4Kcal whereas one gram of fat provides 9Kcal.





COMPONENTS OF ENERGY REQUIREMENTS



- ✓ Basal metabolism
- ✓ Basal Metabolic Rate
- ✓ Metabolic response to food
- ✓ Dietary induced thermogenesis
- ✓ Physical activity





COMPONENTS OF ENERGY REQUIREMENTS



- ✓ Discretionary action
- ✓ Growth
- ✓ Pregnancy
- ✓ Lactation
- ✓ Body Mass Index





CALORIE



Used as standard unit for measuring the energy value of food amount of heat necessary to raise 1 gram of water by 1C. Measures human energy expenditures.





METHODS OF ENERGY MEASUREMENT



- Direct Calorimetry

Measures amount of energy expended by monitoring heat production.

- ✓ Bomb Calorimeter – heat combustion = gross energy value of food.
- ✓ Respiration chamber – heat released from a person's body determine how much energy each activity has burned for that person.





METHODS OF ENERGY MEASUREMENT



- Indirect Calorimeter

Measured by determining with a respirometer the oxygen consumption and carbon dioxide production of the body in a given period of time.

$$RQ = \frac{\text{Volume of CO}_2 \text{ Eliminated}}{\text{Volume of CO}_2 \text{ Consumed}}$$





BODY MASS INDEX



Body mass Index is an estimate of body fat based on height and weight. It does not measure body fat directly, but instead uses an equation to make an approximation. BMI can help determine whether a person is at unhealthy or healthy weight.





BMI CALCULATION



Weight (Kg)

$$\text{BMI} = \frac{\text{Weight (Kg)}}{\text{Height (M)}^2}$$

(Height in M)

BMI

Below

18.5 – 24.9

25.0 – 29.9

30 and above

-

-

-

-

WEIGHT STATUS

Under weight

Normal

Over weight

Obese





BASAL METABOLIC RATE



BMR is the minimum amount of energy required by the body to maintain life at complete physical and mental rest in post operative state. Several functions within the body occurs at basla condition

- Working of heart and other organs
- Conduction of nerve impulse
- Reabsorption by renal tubules
- GI mobility





CONCLUSION



Nutrition is the science of food and its relationship to health – how the human body uses food and processes the nutrients, it contains to enables the body to perform functions. Energy is the capacity to do work.





REFERENCE

- Darshan sohi, “ A comprehensive textbook of applied Nutrition and dietetics” , 3rd edition, published by Jaypee publication.
- Shella John, Jasmine devaselvam, “Essentials of Nutrition and dietetics for nursing”, 2nd edition, published by Wolters Kluwer.
- <https://www.slideshare.net/aiswarya1995/balanced-diet-57863742>

