Unit-2

Diet and Nutrition

Contents

2.0 Unit Overview and Description:

Overview

This unit will provide the student information about the various aspects of diet and nutrition.

Knowledge and Skill Outcomes

Outcomes : The following knowledge must be assessed as part of this Unit:

Diet and Nutrition

- Health, Food and Nutrition
- Classification of Food
- Meal Planning
- Review

Duration

Total Hours : ***Theory*** - 12 hrs (12 Periods) - 05 Marks
Practical - 12 hrs (12 periods) - 10 Marks

Resource Material

- Nutrition: A practical approach– Suzanne le Quesne
- Food Science nutrition & health– Fox & Cameron
- A guide for health and beauty therapist– Gaynor & Winyard
- Beauty therapy fact file– Susan Cressy
- Food nutrition & Diet therapy– L Kathleen Mohan, Sylvia Escott
- Diet & Nutrition: A Holistic approach– Rudolph Ballentine
- Food Science– Sumati R Mudambi
- Nutrition & Diet therapy– Ruth A Roth, Carolynn E
- Diet & Nutrition Katie Dicker
- Fundamentals of food & nutrition Sumati R Mudambi

Learning Outcomes : Unit II : Diet and Nutrition

2.1 Health, Food and Nutrition	Outcomes
	You will be able to understand • Definition of Health, Food and Nutrition.
2.2 Classification of Food	You will be able to understand • Functions of the Food • Balanced Diet • Yogic Diet
2.3 Meal Planning	You will be able to understand • Diet for Adolescent Girl • Diet for Putting on and Reducing weight for Teenage Girl (16- 19 years)

Assessment Plan for the teachers

S.No.	Topic	Assessment Method	Remarks
2.1	**Health, Food and Nutrition**	Exercise: Question & Answer Practical: Display of various food items (Vegetable and Fruits)	
2.2	**Classification of Food**	Exercise: Question & Answer Practical: Display of various food items which contains all food nutrients	
2.3	**Meal Planning**	Exercise: Question & Answer Practical: Display of food products which contains different nutrients for Meal Planning for Adolescent Girl	

2.1 Health, Food and Nutrition.

HEALTH

As defined by World Health Organization (WHO), it is a "State of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity." Health is a dynamic condition which can be in good state or in bad state resulting from a body's constant adjustment and adaptation in response to stress and changes in the environment for maintaining an inner equilibrium called homeostasis.

FOOD

Any nourishing substance which is of plant or animal origin that is eaten, drunk, or otherwise taken into the body to sustain life, provide energy, promote growth, etc. is known as Food.

Food may be the most important factor to maintain the health of your body. When you eat it, you are supplying your body with the nutrients that it uses to build and maintain your cells, create hormones, run chemical reaction.

NUTRITION

Nutrition is the intake of food, considered in relation to the body's dietary needs. Good nutrition is an adequate, well balanced diet combined with regular physical activity – is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity.

By W.H.O (World Health Organization)

Nutrition is the process which involves taking in and the utilization of food substances by which growth, repair and maintenance of the body are accomplished. Nutrients are stored by the body in various forms and are used when the food intake is not sufficient.

The moment we place a piece of food in our mouth and we begin to chew, our brain is stimulated to secrete powerful digestive enzymes that will help our body to digest the food. Once the food is broken down, the nutrients (Proteins & carbohydrates) are absorbed in our intestines to be used by our body. When our body has taken and used what it needs, the waste products are eliminated from our body. This physiological process relies on thousands of chemical reactions and enzymes, and is only possible because of the nutrients in the foods that we eat.

Review Questions:

Q.1. What is the definition of Health by W.H.O.?
Q.2. What is the definition of Food?
Q.3. What is the definition of Nutrition?

2.2 Classification of Food

Food can be obtained from animals as well as from plants which includes organic as well as inorganic sources. Food is classified according to its nutrient composition and also according to the function it serves in the body.

Nutrient Classification:

Nutrients can be divided into seven groups:

1. Proteins
2. Carbohydrates
3. Fats
4. Vitamins
5. Minerals
6. Water
7. Roughage

Food is essential for every living organism. No Life on this earth is possible without food. The desire to eat is normal and basic in human beings. This does not however mean that an individual is eating well. Eating just any food will satisfy the appetite and provide energy.

In the body protein, fats, carbohydrate can be described as energy yielding nutrients. They are also called as macronutrient because we need large quantities of them on daily basis. These macronutrients are also called as organic .Organic nutrients contain hydrogen, oxygen and carbon. Vitamins, Minerals and water do not provide energy to the body .Although vitamins are classified as organic nutrient whereas minerals and water are inorganic (they do not contain carbon).Vitamins and minerals are called as micronutrients because we need only tiny amounts of them compared to the macronutrients.

FOOD PYRAMID

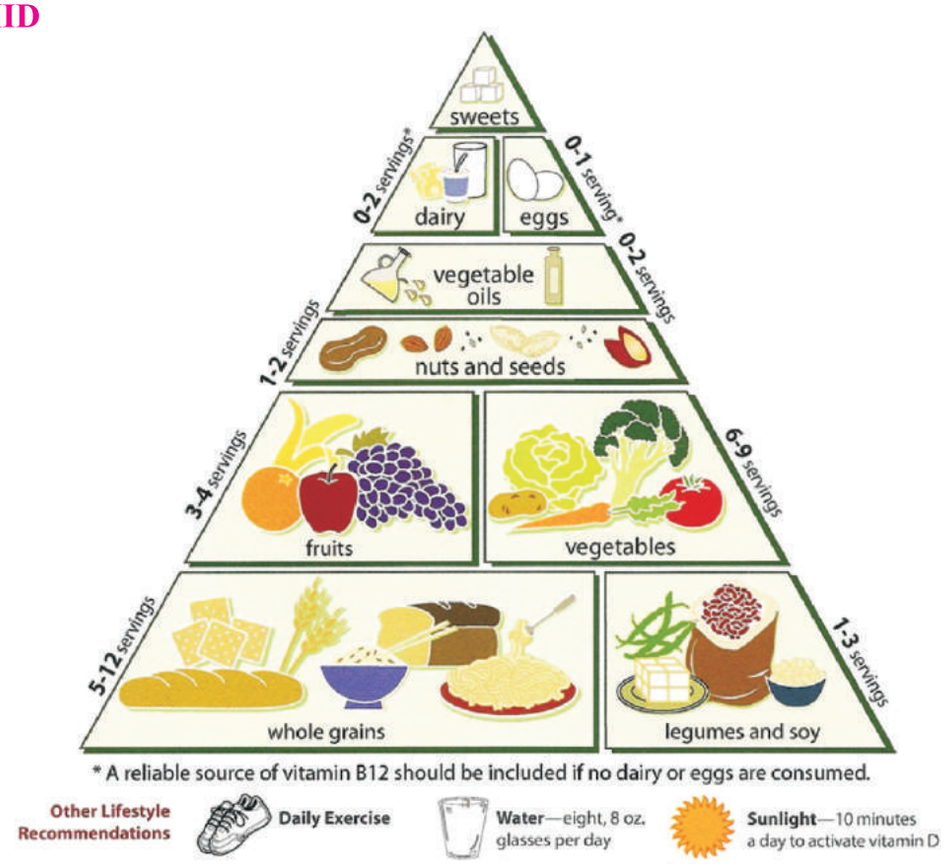


Figure: A Typical Food Pyramid

All Food Nutrients are required by individual to have healthy body. Food helps body to fight against the diseases and keep everyone healthy. Right kind of food keeps body physically, mentally and psychologically fit. Food can be obtained from animal as well as plant kingdom from organic as well as inorganic sources. No life on this earth is possible without food. The desire to eat is normal and basic in human beings.

CARBOHYDRATES

Carbohydrates are made up of carbon, hydrogen and oxygen particles. They are composed of variety of dietary compounds such as from simple sugars to complex sugars. Simple sugars are called as monosaccharide which are easily found in fruits and can be easily digested. When two simple sugar molecules combine then they form disaccharides. For eg: sucrose (table sugar) similarly, many disaccharides combine together to form a chain like structure which is known as polysaccharides.

A. Function

- They give us immediate energy as sugar in its lowest form of glucose is easily absorbed and utilized. They are the main source of energy for all body functions.
- Amylase (an enzyme) help to break down carbohydrates into glucose (simple sugar), which is used for energy by the body.
- **Sources:**
    1. Milk and Milk Products.
    2. Table sugar, Fruits, Syrups, Starchy Food, Vegetables, Legumes, Wholegrain Breads and cereals etc.

B. Deficiency of Carbohydrates:

Deficiency of carbohydrates means that the body will not be able to produce enough energy; which will lead to fatigue and weakness. In this state, body is compelled to obtain energy by breaking proteins and fat which will lead to a drastic and unhealthy weight loss. In addition to that various systems of the body. immune and other system will also suffer.

C. Excess of Carbohydrates:

Excess carbohydrates are always stored in form of fat in adipose tissues which leads to weight gain or inability to lose weight. Excess consumption of carbohydrates is also responsible for high blood sugar level causing severe heart diseases and uncontrolled diabetes.

PROTEIN

Proteins help in the growth of the body and is a body building nutrient. It repairs the body tissues (muscles).

A. Functions:

- Enzymes, antibodies, hormones and molecules of the immune system are proteins.
- One of the main function of proteins is to carry out essential body processes like water balancing, nutrient transport and muscle contractions.
- Proteins help to keep the skin, hair and nails healthy.

Sources:

Animal Proteins-Meat, Fish, Eggs, Milk, Cheese

Plant Proteins: Vegetables, lentils, pulses, nuts, soya, wheat, peas etc.

B. Deficiency of Proteins

Shortage of proteins in infants and children leads to growth retardation diseases like marasmus and kwashiorkor. The Deficiency of proteins also affects the gland that secrete digestive enzymes, resulting in failure to digest and absorb the food, which leading to diarrhea, loss of fluid and electrolyte from the body. Proteins form important structure of various hormone, so its deficiency will lead to characteristic change in the functioning of endocrine glands

C. Excess of Proteins

Proteins is not particularly dangerous but if taken in excess will lead to weight gain, intestinal irritation, kidney problems ,liver disorders and osteoporosis.

FATS/ LIPIDS

Fat is made up on carbon, hydrogen and oxygen molecules. Fats are stored in the body as saturated fats which mean they have additional hydrogen particles. In order to be used by the body, the fats are required to be unsaturated, so the saturated fats are carried to the liver where the hydrogen is removed to form unsaturated fats.

A. Function

- Fat is required by the body for energy and various other important functions of the body including respiration, digestion etc. It is found and stored as glycerol.
- If fat is taken in excess, then they will be stored in the liver and around the body until energy is required. They provide us with insulation and protect delicate body organs
- They also produce highly active biological substance (prostaglandins) that are vital for normal functioning of the body
- Cholesterol: is a complex lipid formed from saturated fats. It is present in the blood and is a component of cell membrane. It is needed for the synthesis of several hormones and bile salts.

Sources:

Animal fats: Lard, Butter, Cream, Egg Yolk, Milk, Suet, Fish Oils.

Plant fats: Olive Oil, Margarine, Sunflower Oil.

B. Deficiency of Fats

If we do not eat adequate fat, then our body won't be able to absorb fat soluble vitamins which act as antioxidant.As fat is important for proper transmission of brain signal ,lack of these fat could lead difficulty in concentrating and learning low-fat diets also play a role in cholesterol levels and heart disease. When your diet is too low in fat, your body's level of HDL (the "good" cholesterol) goes down. HDL collects "bad" cholesterol from the blood and transports it to the liver for excretion. When those ratios are out of balance—and when your LDL ("bad" cholesterol) level gets too high, you face cholesterol problems and an increased risk of heart disease

C. Excess of Fats

Excessive intake of fats will lead to many heart diseases such as atherosclerosis due to which constricts the flow of blood to tissues gets constricted, leading to hearts attack or strokes. This in turn increases cancer risk and may also cause obesity.

VITAMINS

A regular intake of vitamins is essential to maintain good health. They are found in fresh raw and can be easily destroyed by cooking. Vitamins are necessary catalysts which ensure that body's functions are efficient.

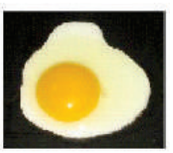
There are two classes of Vitamins:

a) Fat Soluble Vitamins:

Vitamin A, D, E, K (can be stored in the body)

b) Water Soluble Vitamins:

Vitamin B, B complex and C (cannot be stored in the body and therefore must be regularly supplied)

Vitamin B (Complex)	Found in	Function	Deficiency	Excess	
Vitamin B1 (thiamine)	Peas, Beans, Lentils, East, Liver, Pork, Apples, Egg, Yolk, Yeast, Extract.	1. Essential for metabolism, brain function and digestion 2. Acts as enzyme in converting glucose into energy	1. Beriberi (Nervous Disorder) 2. Insomnia 3. Poor Concentration and Memory	1. Dizziness 2. Nausea 3. Headaches 4. Skin Irritation 5. Pain in Joints and Bones 6. Coma	  
Vitamin B2 (Riboflavin)	Yeast, Liver, Milk, Meat, Fish Roe, Eggs, Green Vegetable	1. Helps with the oxidation of foods to provide energy 2. Helps prevent dermatitis and skin eruption 3. Slows cholesterol production 4. Healthy skin and good vision	1. Cracks and sores in corners of mouth and eyes 2. Hair loss 3. Sluggishness, memory loss	1. Excess B2 is excreted through urine (causing it to turn in yellow colour) 2. Numb or burning sensation over skin 3. Itchy Skin	  

Vitamin B3 (Niacin)	Yeast, Pulses, ,Chicken , Whole Grains (Especially Sprouting Grains)	1. Produces energy from sugars, fats and proteins 2. Maintain normal blood sugar level 3. Maintain Healthy Skin and Brain Functioning	1. Pellagra Affecting Skin, Digestive And Nervous System 2. Dementia 3. Depression 4. Dermatitis, Rash,Acne, Rough Inflamed Skin	1. Stomach Ulcers 2. Liver disorders 3. Niacin flush (a red, inflamed appearance to the skin over face and chest)	  
Vitamin B6 (Pyridoxine)	Whole Grain Cereals, Yeast, Milk, Fish, Liver, Egg Yolk	1. Act As Coenzyme For Protein Metabolism 2. Helps In Synthesis Of Brain Chemicals 3. Crucial For Blood Formation And Also Act As Anti Depressant & Anti Allergic	1. Irritability 2. Fluid Retention 3. Hair Loss 4. Allergies 5. Tremors	1. Decrease In Your Resistance Making You More Susceptible To Diseases. 2. Damage To Nerve	  
Vitamin B12 (Cobalamins)	Liver, Kidney, Milk, Eggs, Cheese, Pork, Beef, Lamb, Sardines. Difficult To Find In Vegetable Source	1. Essential For Production Of Anemia 2. Protects Our Nerves 3. Helps In Synthesis Of Protein	1. Pernicious Anemia 2. Nerve Degeneration 3. Menstrual Disorders	1. Mild Diarrhea 2. Swelling Of Body 3. Heart Failure 4. Pulmonary Oedema	  

Vitamin B (Folic Acid)	Green Leafy Vegetables, Liver, Kidney, Eggs , Beetroot, Asparagus, Avocado Broccoli	1. Beneficial In Early Stages of Pregnancy to Help Prevent Growth Disorders 2. Prevents Pellagra (Scaly Dermatitis, Diarrhea, Depression)	1. Anemia 2. Weakness And Fatigue 3. Prematurely Graying Of Hair 4. Miscarriage And Premature Birth	1. Nausea 2. Loss Of Appetite 3. Unpleasant Taste In Mouth 3. Insomnia	  
Vitamin C (Ascorbic Acid)	Citrus Fruits, Tomatoes, Kiwi Fruit, Potato Skins, Sprouted Seeds And Beans	1. Vital For Supporting For Immune System And Antibody Production 2. Detoxifies Heavy Metals And Carcinogens 3. Aids Absorption of Iron 4. Produces Antis Stress Hormones 5. Reduces Cholesterol Level	1. Scurvy (Bleeding of Gums) 2. Frequent Cold and Infections 3. Nose Bleeds 4. Slow Wound Healing 5. Anaemia And Premature Ageing	1. Bloatedness 2. Diarrhea 3. Frequent Urination 4. High Blood Sugar Levels 5. Increases The Risk of Kidney Stones.	  

B. Fast Soluble Vitamins (Stored in body)

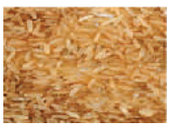
Vitamins	Found in	Function	Deficiency	Excess	Diagrams
Vitamin A (Keratin or Retinol)	Carrots, Milk, Cream, Lettuce, Egg Yolk, Fish, Liver Oils, Yellow Or Orange Colored Fruits And Vegetables Which Contain Beta Carotene	1. Essential For Promoting Vision, Supporting Reproduction And Growth 2. Supporting Immune System And Maintenance Of Skin	1. Night Blindness 2. Dry Flaky Skin 3. Acne 4. Frequent Cold And Infections 5. Mouth Ulcers	1. Nausea 2. Vomiting 3. Dizziness 4. Blurred Vision	  

Vitamins	Found in	Function	Deficiency	Excess	Diagrams
Vitamin D (Calciferol)	Exposure To Sunlight ,Fish Liver Oil, Salmon, Tuna, Eggs	1. Acts As Antioxidant And Promotes Absorption of Calcium And Phosphorous 2. Necessary For Strong Bones And Teeth 3. Helps In Functioning of Thyroid And Parathyroid Gland	1. Osteoporosis 2. Rickets 3. Hypocal-cemia 4. Malnutrition	1. Severe Depression 2. Over Absorption of Calcium In Digestive Tract	  
Vitamin E (Tocopherol)	Wheat Gram, Egg Yolk, Spinach, Milk-Lettuce, Sunflower Seeds, Sesame Seeds ,Soya Beans	1. It Fights Against Free Radicals And Therefore It Is Called As Antioxidantlack Of Sex Drive 2. Promotes White Cells For Resistance And Maintains Healthy Blood Vessel	1. Loss Of Muscle Tone 2. Slow Wound Healing 3. Varicose Veins	Increased Risk of Developing Chronic Diseases	  
Vitamin K (Phylloquinone)	Green Leafy Vegetables, Lettuce Cabbage Family, Corns, Potatoes, Tomatoes	1. Essential For Production Of Prothrombin (Blood Clotting) 2. Helps In Normal Liver Functions 3. Aids In Reducing Excessive Menstrual Flow	1. Prolonged Clotting Time 2. Excess Nose Bleeding, Gum Bleeding 3. Heavy Menstrual Flow	Increases Risk Of Kidney And Heart Diseases	  

MINERALS

These are inorganic (i.e. not living) nutrients which although produce no energy value but, they are important in maintaining good health and are vital for our existence. In a normal carried diet, there should be no deficiency apart from possible iron and calcium during pregnancy and lactation (breast feeding). Several mineral salts are required by the body in large amounts while others are required in traces (trace elements). Deficiency of minerals can result in incomplete utilization of the food being consumed by the body to the nutritional values of foods being properly extracted. Minerals are neither dissolvable nor gets digested; within the body, although they work as catalyst to break down foods into a workable form. In addition to those minerals listed below, we also require: copper, zinc, sulphur, chlorine and magnesium.

Mineral	Sources	Function	Deficiency	Excess	Diagrams
Calcium	Milk And Milk Products, Salmons And Sardines, Green Leafy Vegetables, Parsley And Pumpkin Seed	1. Builds and maintains healthy bones and teeth 2. Aids blood clotting	1. Rickets in children 2. Osteoma-lacia in adults 3. Bone pain 4. Muscle weakness and cramps	1. Nausea, 2. Constipation, loss of appetite, 3. Abdominal pain, vomiting, 4. Dry mouth 5. Frequent urination.	  
Sodium	Table Salt, Sea Salt, Processed Cheese, Meat And Fish	1. Maintaining water balance 2. Helps in transmission of nerve impulse	1. Low blood pressure 2. Rapid pulse 3. Dry mouth 4. Muscle cramps 5. Dehydration 6. Sunken features like sagging skin	1. Fluid retention 2. High blood pressure 3. Changes in urination 4. Extreme thirst	  

Mineral	Sources	Function	Deficiency	Excess	Diagrams
Potassium	Raisins, Peanuts, Dates, Vegetables and Fruits Apricots, Tomato Juice, Baked Potatoes	1. Helps in transmission of nerve impulse 2. Helps secretion of insulin for blood sugar control 3. Maintains heart functioning	1. Muscle weakness 2. Loss of muscle tone 3. Fatigue 4. Mental apathy 5. Irregular heart beat	1. Difficulty in breathing 2. Irregular heart beat 3. Tingling and numbness in your extremities	  
Iron	Meat ,Fish, Pumpkin seeds, Parsley, Almonds, Cashew Nuts	1. Transports oxygen and carbon dioxide to and from cells 2. Vital for hemoglobin production	1. Anaemia 2. Pale skin 3. Heavy menstruation 4. Breathlessness 5. Palpitations	1. Pain in chest, abdomen and groin region 2. Flushing of skin 3. Swelling of mouth and throat 4. Metallic taste	  
Iodine	Iodized salt, Seafood Like Kelp And Arame, Dairy Products	1. Helps in synthesis of thyroid hormones 2. Helps in brain development 2. Maintains BMR.	1. Weight gain 2. Goitre 3. Dry flaky skin Intolerance to cold 4. In pregnant mothers it will lead to miscarriage and still birth	1. Thyroid cancer 2. Severe skin disorder 3. Weight loss	  
Phosphorous	Cheddar Cheese, Nuts, Eggs, Red Meat ,Brown Rice	1. Forms and maintains bone and teeth 2. Needed for milk secretion in lactating mothers 3. Builds muscle tissue	1. Osteoporosis 2. Loss of muscle control and strength 3. Convulsion 4. High blood pressure	1. Decreases bone density 2. Hardening of soft tissues and organs	  

WATER

Water is vital for human existence .We can live without food for extended period of time , but life without water will cause death.

Functions of Water:

1. It plays a vital role in the maintenance of body temperature.
2. It is an essential constituent of all the cells of body and is required to maintain an internal environment.
3. Water is a medium for most biochemical reactions within the body.
4. It is a valuable solvent in which various substances such as electrolytes, non-electrolytes, hormones, enzymes, vitamins are carried from one part of the body to other.
5. It forms a part of fluids in body tissues; for eg the amniotic fluid surrounds and protects the foetus during pregnancy.
6. Saliva which is about 99.5% water, swallowing easier by moistening the food and finally helps in digestion.
7. Requirement of water varies according to climate, diet, activities and surface area of the body.

As a rule, a person should take enough water to excrete about 1200 ml -1500 ml of urine per day. Normal intake of water ranges between 8 – 10 glasses per day.

Prevention of Dehydration

Dehydration can be prevented by taking sufficient amount of water as fluids. The correction of dehydration is called rehydration.

Oral Rehydration Salt

According to WHO, UNICEF formula, NaCl – 3.5 g, $NaHCO_3$ – 2.5g, KCl – 1.5 g and glucose 20 g should be dissolved in one litre of drinking water. Portable drinking water is that which is safe and wholesome i.e., free from pathogenic agents and chemicals.

ROUGHAGE (FIBRE)

Adequate peristalsis occurs in the bowel only when there is sufficient residue for the muscle wall to work on. Roughage is mainly provided by the cell walls of plants. It is found in green vegetables, wholegrain products (cereals), granary bread, bran etc.

Fibre Diets

Fiber or roughage is the name for carbohydrates found in the cell walls of plants. Fiber passes through the body without being absorbed and it helps to maintain a healthy large intestine (bowel). It controls both blood sugar and blood cholesterol levels. Fiber gives a feeling of bulk and fullness; this reduces the desire to eat and therefore is an advantage when trying to lose weight

Review Questions:

Q1. Write down the names of food nutrients?
Q2. Write down the resources of carbohydrates?
Q3. What are the sources of fats?
Q4. What is the place of roughage in the food?
Q5. List down the types of Vitamins?

2.2.2 Functions of Food

PHYSIOLOGICAL FUNCTIONS

Firstly, our body performs several activities- Which include voluntary and involuntary functions. There is not even a single moment in life when the body is completely at rest and does not require energy. Even when the body is at rest, (i.e. during sleep) energy is required to carry out the involuntary processes of the body like digestion, respiration, circulation, beating of the heart etc. Energy is also required to carry out professional, household and recreational activities. This energy is supplied from foods like carbohydrates and fats.

Secondly, food provides nutrients for tissue building, growth and body repair, and these nutrients are mainly supplied through foods like proteins and minerals. The muscles, bones and different parts of the body are developed and maintained by the proteins supplied through the food. Minerals like calcium, iron and phosphorus affect the formation of blood and skeleton tissue (bones).

Thirdly, food protects the body against diseases. Here, vitamins play a vital role in regulating body processes like growth, eyesight, health of the skin, formation of teeth and good digestion. Minerals also act as catalysts for many biological processes within the body. They are required for building of bones, muscular contraction, and transmission of messages through the nervous system and the digestion and utilization of nutrients in food. Vitamins and minerals are needed for maintaining the general health of the body.

Fourthly, water and roughage in foods act as regulatory foods that are needed for the normal functioning of the body. In importance and need, water is next to oxygen. It is required in large amount to regulate various body processes such as digestion, excretion, maintenance of body temperature and the electrolyte balance. Roughage helps in good bowel movements

PSYCHOLOGICAL FUNCTONS

Foods satisfy certain emotional needs of human beings and act as a source of security. An infant learns security from the way his mother feeds him. Similarly, a growing child gains confidence and a feeling of belonging, when he knows that there is food in the house and he will be fed. People feel reasonably secure, when they have enough food stored up to take care of them during scarcity. Food is also an outlet for emotion. As a relief from tension, one may not eat or over eat. For some people, loneliness and boredom are relieved by continuous nibbling at food. Food is also used as a weapon, when an insecure child refuses to eat, thereby drawing the attention of the parents especially the mother

Review Questions:

Q1. Write a short note on various physiological functions of food?

Q2. Write a short note on psychological effects of food?

2.2.4 Balanced Diet

A Balanced diet is the diet which contains all essential nutrients in adequate proportions so as to meet the energy requirements in order to gain and maintain health.

On an average one should include following things in their balanced diet.

55% of carbohydrates – 55% of total number of calories should come from this category. Ideally this much percent of carbohydrates should be spread throughout the day over breakfast, lunch and in evening meal 15% of proteins -15% of total number of calories should come from this category. Ideally this much percent of proteins

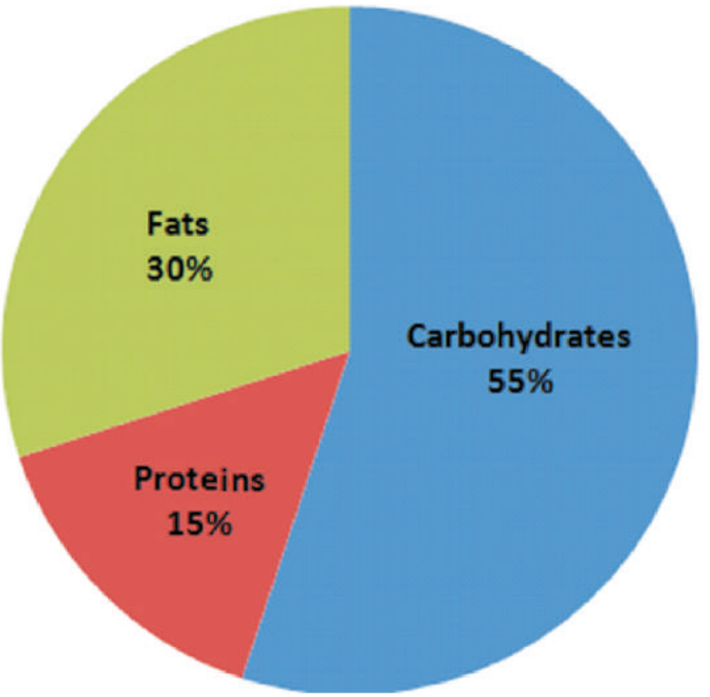


Figure: Schematic Contribution of Dietary Supplements

should be spread throughout the day over breakfast, lunch and in evening meal.

30% of fats – 30% of total number of calories should come from this category. Ideally this much percent of fats should be spread throughout the day over breakfast, lunch and in evening meal.

Guidelines for Balanced Diet

1. Include carbohydrate, fats, protein, vitamins, and minerals in correct proportion.
2. Do not eat sugary foods too often.
3. Do not eat too much of fat.
4. Include daily intake of fresh fruits and vegetables at least five portions per day.
5. Eat plenty of food rich in fiber and starch.
6. Eat right amount of food to be healthy.
7. Eat a variety of different foods.
8. Last and most important is to enjoy your food.

PLANNING A BALANCED DIET FOR A WEEK

One can plan and shop for your weekly meals all at once and consolidate preparation work to streamline the process as much as possible.

Make sure you include all five groups in your diet chart.

Dietary Allowance	13-15 years		16-18 years	
	Boys	Girls	Boys	Girls
Body Weight (Kg)	47.8	46.7	57.1	49.9
Energy (Kcal)	2450	2060	2640	2060
Protein (gm)	70	65	78	63
Iron (mg)	41	28	50	30

Table : Dietary Allowances for Various Age Groups

Carbohydrates, fats and protein must be divided in proper proportions so as to meet all energy and nutrient requirement in day to day life.

Below is the recommended diet chart for two days in order to give an idea which will help us to prepare a diet chart according to our choice and taste preferences.

	**Early Morning**	6:00 am	Tea or Coffee or Milk	150 ml
	**Breakfast**	8:30 am 8:30 am	"Idly- 4 nos OR Dosa - 4 nos OR" Chapatti OR Upma OR Wheat Bread AND Sambar OR Chutney OR Vegetable Curry OR Corn flakes OR Oats with skimmed milk	100g batter 100g flour 100g rava 6 slices 2 cups 100g & 200 ml
	**Mid Morning**	10:30 am 11:00 am	Fruit OR Salad OR Buttermilk OR Veg Soup AND Sprouts AND Dry Fruits & Nuts	200g 1 cup 150 ml 150 ml 1 cup 50g

	**Lunch**	12:30 pm 1:30 pm	Rice OR Chapatti - 4 nos AND Vegetables AND Green leafy vegetables AND Fish OR Chicken OR Egg OR Low fat paneer OR Soya bean AND Curd OR Buttermilk	100g uncooked 100g flour 1 cup 1 cup 100g 1 nos 60g 30g 1 cup 200 ml
	**Tea Time**	4:00 pm 6:00 pm	Tea OR Coffee OR Milk Mari Biscuits OR Sprouts AND Bread Toast OR Veg Sandwich OR Groundnuts	150 ml 3 nos 1 cup 2 slices 1 no 100g
	**Dinner**	8:00 pm 9:00 pm	Rice OR Chapatti - 4 nos AND Vegetables AND Fish OR Chicken OR Egg OR Low fat paneer OR Soya bean AND Curd OR Buttermilk	100g uncooked 100g flour 2 cups 100g 1 no 60g 30g 1 cup 200 ml
	**Instructions**	Note : 1 cup - 100 ml/g		
	**Avoid**	Fried foods Bakery products like cakes, pastries, puffs, etc Aerated and carbonated drinks		
	**Include**	Vegetables, salads, sprouts, veg soups Green leafy vegetables Fruits		
	**Restrict**	Non Veg (Chicken once in a week) Sugar and sweets Underground vegetables especially potatoes		
	**Allowance per day**	Oil 3-4 tsp (25-30 ml) Salt 5g (1 tsp) Skimmed milk 600 ml/day	Sugar 3-4 tsp (15-20g) Water 2 ½ - 3 L	

Table : Recommended Diet Chart

Remember that the above chart doesn't include small meals or snacks, which you can add according to individual, his physical activities and which season is going on. And also our diet plan must end with compulsory bedtime drink.

Female Height to weight Ratio				Mail Height to weight Ratio			
Height	**Low**	**Target**	**High**	**Height**	**Low**	**Target**	**High**
4' 10"	100	115	115	4' 1"	123	134	145
4' 10"	101	117	117	4' 2"	125	137	148
5'0"	103	120	120	4' 3"	127	139	151
5'1"	105	122	122	4' 4"	129	142	155
5'2"	108	125	125	4' 5"	131	145	159
5'3"	111	128	128	4' 6"	133	148	163
5'4"	114	133	133	4' 7"	135	151	167
5'5"	117	136	136	4' 8"	137	154	171
5'6"	120	140	140	4' 9"	139	157	175
5'7"	123	143	143	4' 10"	141	160	179
5'8"	126	146	146	4' 11"	144	164	183
5'9"	129	150	150	6' 0"	147	167	187
5'10"	132	153	153	6' 1"	150	171	192
5'11"	135	156	156	6' 2"	153	175	197
6'0"	138	159	159	6' 3"	157	179	202

Height = Feet and Inches
Weight = Pounds

Figure : Height to Weight Ratio in Males and Females

Review Questions:

Q1. What is the meaning of balanced diet?
Q2. What are the components of balanced diet?
Q3. How would you plan meal in balanced diet?

2.2.6 Yogic Diet

To have healthy body is a right of every person. Food helps body to fight against the diseases and keeps everyone fit. Good food keeps body healthy, physically, mentally, emotionally and religiously. Yogic diet is not a different kind of diet, it is natural which keeps one healthy and fulfills all the body requirements related to proteins, vitamins, carbohydrates, fats, minerals, water and roughage. Good food reflects in individuals and behavior. Apart from the good food there are various habits one should adopt in her daily routine.

Points to Remember

- The first and foremost principle of a yogic diet is that the food should be simple, natural, non-stimulating, tissue-building, energy-producing, light, nutritious and easily digestible.
- Eat according to the need of the body and quantity of food eaten.

- The kind of food and quality of food affects the physical as well as mental condition of the individual.
- Chew your food well; it gets absorbed in the body more easily.
- The volume of the food eaten, also the calories consumed.
- Lifestyle involving sedentary activity eating more refined and processed foods rich in fat and salt, increasing tensions, high blood pressure or hypertension shall be avoided.

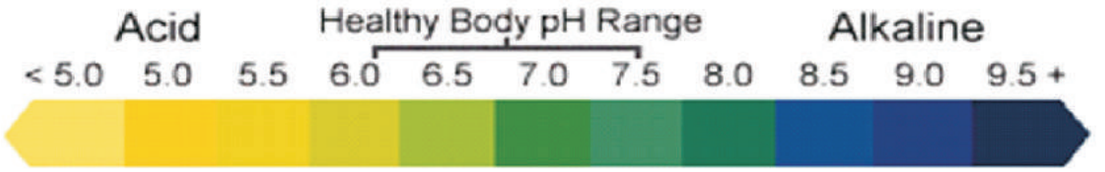


Figure: pH Scale of Substances

- Avoid stress, emotions like anger and jealously while eating and otherwise also.
- Eat at regular intervals.
- Drink Luke warm water 10 to 15 minutes before a meal.
- Always fill your stomach only the half with pleasant, wholesome food of your choice. Another quarter should be filled with water and the rest left empty for expansion of gases.
- The emphasis is on foods that keep the mind pure and calm. Milk, barley, wheat, cereals, butter, cheese, tomatoes, honey, dates, fruits, vegetables and almonds figure high on the list.

According to Yoga,food is divided into three categories:-

1. Satvik 2. Rajasik 3. Tamasik

	pure, light, sweet positive energy flow	spicy, over-stimulating creates restless, excited mind	dull, heavy, blocks flow of prana, creates toxins
	Sattva	**Rajas**	**Tamas**
	Foods that promotes purity of mind, peace, intelligence and right decisions.	Foods that give us motivation. Food that keeps us attached to the ego and creates desires.	Foods that destroy out resistance to disease. Clouds the mind. Promotes negative emotions.
	Milk	**Coffee/Black Tea**	**Red Meat**
	Herbal Tea	**Chicken**	**Alcohol**
	Ghee	**Eggs**	**Fast Food**
	Grains	**Onion/Garlic**	**Fried Food**
	Fresh Sweet Fruits	**Dark Lentils**	**Frozen Food**
	Fresh Veggies	**Citrus Fruits**	**Canned/Stale Food**
	Honey	**Very Spicy Foods**	**Refined Sugars**
	Nuts	**Chocolate**	**Tobacco**
	Mung Beans	**Salt**	**Soda**
	***Peace while eating**	***Eating too fast**	***Overeating**

Figure: Categorization of Food as per Yoga

1. The Satvik Aahar

The Satvik food comprises of mainly easily digestible, nourishing and freshly prepared food. It includes of all the four variety of taste: salty, sweet, astringent and bitter. This kind of food is easily digestible. It include whole cereals, sprouted pulses, skimmed milk and its products, fresh vegetable and fruits which provide anti-oxidants (vitamins like A, C & E and protective minerals like Potassium, Magnesium, besides fibre). Milk is rich in calcium which also helps to lower the blood pressure. However, the amount we eat depends on our body weight.

Figure: Satvik Aahar

2. The Rajasik Aahar (Food)

The Rajasik food comprises of variety of dishes. This type of food includes fried, roasted, nuts and ghee-rich food, which is not desirable for good health. A little intake of these type of food should be sufficient to titillate the palate.

Figure: Rajasik Aahar

3. The Tamasik Aahar

The Tamasik food includes spicy, bitter, sour, stale and oily food. It comprises of alcohol also. This kind of food makes one selfish, brutal and angry. This kind of food also includes non-veg and fried food which is stale and difficult to digest in modern life style.

Figure: Tamasik Aahar

Review Questions:

Q1. What do you understand by yogic diet?

Q2. How would you classify yogic diet?

2.3 Meal Planning

- Meal planning is the pre planning of the menu for breakfast, lunch and dinner for the next few days, or even the entire month.
- Proper meal planning is important because it helps to ensure the that present meal meet the family's various nutritional needs, as well as will manage a grocery budget while giving the family the opportunity to spend quality time together.
- When meals are well planned in advance, the household is able to eat nutritious, low cost meals. When planning of meals based on available coupons, sales on food items, as well as planning the use of the left overs, a family can save money on their grocery bill.

DIET FOR ADOLESCENT GIRL

This is the time where our body undergoes lot of hormonal changes and because of this our diet should be highly nutritious to promotes enhance development.

A teenage girl's diet is very important at this stage because their bodies are going through many hormonal changes and will continue for few years and for that her body will be looking for additional supplemental nutrients to support the changes. Therefore this the right time to inculcate good eating habits.

It is especially important for teenage girls to have sufficient amount of iron as monthly menstruation can increase the risk of iron deficiency in them.

Diet plan for teen girls should include healthy options for snacking too. Whether it is one of the three major meals or snacks, diet plans should include healthy foods including those which contain the nutrients needed during the growing teenage years.

A good calcium intake is especially important in teenage girls through to the age of about 30 years. Also remember to include sources of essential fats; high protein foods and slow released carbohydrate sources.

BREAK FAST:

Breakfast is the most important meal for adolescent girls. It is important so that we can charge the body with energy that can last until rest of the day. Breakfast should include adequate proportions of protein, carbohydrates, fats and whole grain products that add fibre. Fruits and vegetables are a rich source of fibre too.

Pertaining to the need of teenage girls, vitamin D and calcium are more important because of the need for building bone mass. That is why all healthy diet plans for teenage girls should include milk.

High fibre cereal for eg 2-3 slices granary bread (toasted) + jam / peanut butter **OR** "Idly- 4 no's OR Dosa- 4 no's **OR** "Chapatti **OR** Upma **OR** Wheat Bread.

AND

Sambar **OR** Chutney **OR** Vegetable Curry **OR** Corn flakes **OR** Oats with skimmed milk **OR** you can also include 2 boiled eggs or omelets' with 2-3 slices of whole grain bread.

MID MORNING

Fruit **OR** Salad **OR** Buttermilk **OR** Veg Soup

AND

Sprouts **AND** Dry Fruits & Nuts (8-10 NOS)

LUNCH

Rice **OR**Chapatti - 4 no's

AND

Vegetables either Green leafy **OR** fruit vegetables **AND**

Fish **OR** Chicken **OR** Egg **OR** Low fat Paneer **OR** Soya bean

AND

Curd **OR** Buttermilk **OR** Chopped carrot / cucumber / celery in a bowl yoghurt

EVENING SNACK

High fibre cereal like 2 slices of bread with peanut butter **OR** porridge **OR** tea **OR** coffee with biscuits **OR** Sprouts

AND

Bread Toast **OR** Veg Sandwich **OR** Chicken sandwich

EVENING MEAL

Typical family meal e.g.: 120-150g chicken breast / lean meat / white fish

AND

5-6 tbsp cooked basmati rice **OR** 600g cooked pasta **OR** potatoes mashed / boiled

OR Veg salad that include carrot, cucumber, lettuce

AND

Sprouts andRice **OR** Chapatti - 4 no's

AND

Vegetables (LEAFY OR FRUIT VEGETABLES), Egg **OR** Low fat paneer **OR** Soya bean **AND** Curd **OR** Buttermilk

BEDTIME : Milk

Review Questions:

Q1. What kind of diet should be advised for growing girl?

Q2. What is the importance of Calcium in the diet of Adolescent Girl?

Q3. What is the importance of Breakfast for a growing Girl?

2.3.2 Diet Planning For Putting On and Reducing Weight For Girl (16- 19 Years)

Diet Planning For Putting On Weight

The first main priority for gaining weight should be in nutritious way with no health risk in solved rather than gorging on just fatty foods. The most important thing is to consume more food than the basal metabolic rate so that the reserved energy is stored in the form of fats which ultimately aid to gain weight. The diet that we have to follow should be high in calories and at the same time should be nutritious too. Though for increasing muscle weight, protein is important while we should not minimize the intake of carbohydrates and fats. Our diet chart should include 5 – 6 meals per day for instance 3 large meals and 3-4 small snack meal

Instead of going on binge eating sprees, it is best to increase your calorie count each day, based on how much weight you need to gain. Since around 3,500 calories make up one pound, you can gain a pound in a week, by eating around 500 calories more than what you burn on a daily basis. In order to give your body time to adjust, it is best to gain no more than one or two pounds a week.

Here is the list of food that your high calorie diet should be included in order to gain weight

- Our breakfast should begin with cereals which is a good way to gain weight. The cereals that we should include in our diet are oat bran, granola, nuts, wheat bran, muesli. We can also add seasonal fruits and dry fruits in one of these cereals and eat them by mixing it with milk
- Vegetables should be included in our diet, though all vegetables are important but in your diet plan high amount of starchy vegetables like carrot, potatoes, corn, peas must be included
- Just like vegetables, even fruits have to be consumed throughout the day. High caloric fruits like apple, banana, pineapple, pear, as well as dried fruits can be included as snacks which should be taken in between the heavy meals.
- Beverages: Fruit juices, fruit smoothies, milk, etc. should be a part of our daily diet. Also, do not forget to drink adequate amount of water, i.e. at least 8 glasses in a day. Consumption of drinks like tea, coffee, alcohol, etc. should be minimum.
- Other Foods: Apart from these foods, one may include foods like different types of soups made with barley, split peas, black beans, etc. Salads made with vegetables, kidney beans, lean meats, fish, cottage cheese, etc, will also help us in gaining weight. Dairy products like cheese, eggs, butter, yogurt, etc. should be part of our diet plan as they contain high amount of proteins

DIET PLANNING FOR REDUCING WEIGHT

Weight is like an balancing act, if we eat more calories than we burn then you gain weight and if we eat fewer calories than we burn then we lose weight

Since 3,500 calories equals about 1 pound of fat, if we cut 500 calories from our typical diet each day, we'll lose approximately 1 pound a week (500 calories x 7 days = 3,500 calories)

All too often, we make weight loss more difficult than it needs to be with extreme diets that leave us starving, unhealthy lifestyle choices that undermine our dieting efforts. But there's a better way! We can lose weight without feeling miserable. By making smart choices every day, we can develop new eating habits and preferences that will leave us feeling satisfied — as well as winning the battle of the bulge.

Try not to eat while working, watching TV, reading, using a computer, or driving as this will lead to eating more than usual

Try chewing each bite 30 times before swallowing. We'll prolong the experience and give ourself more time to enjoy each bite.

BELOW ARE THE FEW DO'S AND DON'T FOR LOSING WEIGHT

- Pour a little less cereal into our morning bowl SO THAT WE CAN ADD some blueberries, strawberries, or sliced bananas. We'll still enjoy a full bowl, but with a lower calorie count.
- Replace one of the eggs and some of the cheese in our omelet or scramble with vegetables. Try tomatoes, onions, mushrooms, spinach, or bell peppers.
- Swap out some of the meat and cheese in our sandwich with healthier veggie choices such as lettuce, tomatoes, sprouts, cucumbers, and avocado.
- Instead of a high-calorie snack, such as chips and dip, try baby carrots, a sliced apple, or the old-favorite: celery with peanut butter (just don't overdo it on the peanut butter).
- Add more veggies to our favorite main courses to make our dish "go" further. Even dishes such as pasta and stir-fries can be diet-friendly if they're less heavy on the noodles and more focused on vegetables.
- Try starting the meal with a low-density salad or soup (just to make sure less salt should be added)

If you want to lose weight without feeling hungry and deprived all the time, start eating foods high in fiber. They also take longer time to chew, which makes them more satisfying to eat. High-fiber foods also take a long time to digest, which means we'll feel full longer.

High-Fiber heavy weights include

- **Fruits and vegetables –** Enjoy whole fruits across the rainbow (strawberries, apples, oranges, berries, nectarines, and plums), leafy salads, and green veggies of all kinds.
- **Beans –** Select beans of any kind (black beans, lentils, chickpeas). Add them to soups and salads, or enjoy them as a hearty dish of our own.
- **Whole grains –** Try high-fiber cereal, oatmeal, brown rice, whole-wheat pasta, whole-wheat or multigrain bread.

Review Questions:

Q1. Name the food items beneficial for putting on weight?
Q2. Name the food items that one should avoid while reducing weight?

2.4 Summary:

Diet & Nutrition comes of paramount practical importance especially in the present context. As we learn the functions, sources and benefits of different food item as per their nutritional value. Accordingly the person will take balanced diet. Keeping in mind the yogic diet and balanced diet, girls of different age groups should plan the diet. Food is always for the nourishment of the body and to keep the body disease free throughout the life.

Exercise Question

Theory Questions

Q.1. Distinguish between macronutrients and micronutrients?

Q.2. Write a short note on sources, deficiency and excess of proteins?

Q.3. List various types of B complex vitamins with their sources, deficiency and excess?

Q.4. Distinguish between fat soluble vitamin and water soluble vitamin?

Q.5. What are the guidelines for balanced diet?

Q.6. What do you mean by meal planning and its importance?

Practical Questions

Q.1. List name of various foods which are rich in Vitamin A?

Q.2. List name of various foods which are rich in Vitamin B & Vitamin C?

Q.3. List name of various foods which are rich in Vitamin D Vitamin E & Vitamin K?

Q.4. Prepare a diet chart for one day which should include at least two types of vegetables, fruits and two portions of dairy products?

Q.5. Prepare a diet chart for putting on as well as reducing weight for adolescent girls?

Q.6. What are the considerations for preparing diet chart for weight gain and weight loss?