

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**NUTRITION AND DIETETICS**

**BSN 2308**



**BANGLADESH OPEN UNIVERSITY**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**

# NUTRITION AND DIETETICS

## BSN 2308

<b>Course Development Team</b>
--------------------------------

**Writers**\_\_\_\_\_

**Professor Dr. Shah Mohammad Keramat Ali**  
Institute of Nutrition And Food Science  
University of Dhaka

**Dr. Nigar Sultana**  
Institute of Public Health Nutrition  
Mohakhali, Dhaka

**Editors**\_\_\_\_\_

**Dr. A.K.M. Alamgir**  
Associate Professor  
National Medical College and Hospital, Dhaka

**Md. Abdul Mojib Mondol**  
School of Science and Technology  
Bangladesh Open University

**Style Editors**\_\_\_\_\_

**Dr. Farida Easmin Shelley**  
School of Science and Technology  
Bangladesh Open University

**Syeda Ifteara Khanum**  
School of Science and Technology  
Bangladesh Open University

**Anwar Sadat**  
School of Science and Technology  
Bangladesh Open University

**Program Co-ordinator**\_\_

**Md. Abdul Mojib Mondol**  
School of Science and Technology  
Bangladesh Open University

**Supervision**\_\_\_\_\_

**Professor Khawja Jakaria Ahmad Chisty**  
Dean  
School of Science and Technology  
Bangladesh Open University



# BANGLADESH OPEN UNIVERSITY

**Published by:**

Publishing, Printing and Distribution Division  
Bangladesh Open University, Gazipur-1705

© School of Science and Technology  
Bangladesh Open University

September 2006

**Computer Composed and DTP Layout by:**

Md. Jakir Hossain

**Cover Designed by**

Md. Monirul Islam

**Printed by:**

Emerald Printing Works  
23/1, Zuriatuly Lane  
Nawabpur, Dhaka-1100

**ISBN 98-34-4010-02**

*All right reserved. No Part of this book may be reproduced  
by any means without prior permission of the copyright holder.*



**SCHOOL OF SCIENCE AND TECHNOLOGY  
BANGLADESH OPEN UNIVERSITY**

## **Why and how to use this book**

As a member of the health team, a nurse coordinates the activities of doctors, dieticians and patients including diet prescription, food service, meal serving and patient's response. Doctors decide whether special nutritional care will benefit the patient while a dietician is responsible for the nutritional care of patients. Nurses, therefore, need to be very careful to ensure that a patient receives adequate nutrition.

We have included all relevant topics in this book and will advise nurses to read carefully and use it as often as possible for the welfare of their patients.

We acknowledge help and co-operation of many and record here with gratitude Dr. Rumana Ali Anee. Who underwent much trouble in going through the manuscript.

We shall be pleased if this book becomes useful to the learner.

Professor Dr. Shah Mohammad Keramat Ali

Dr. Nigar Sultana

## Nutrition and Dietetics

### Content

<b>Unit 1</b>	<b>: Basic Concepts of Nutrition and Dietetics</b>	<b>1</b>
Lesson 1	: Basic Principles in Nutrition .....	1
Lesson 2	: Function, Daily Requirement and Source of Food: Micronutrients .....	6
Lesson 3	: Desirable Body Weight and Energy Requirement .....	21
Lesson 4	: Planning Diet .....	25
<b>Unit 2</b>	<b>: Food Safety and Hygiene</b>	<b>31</b>
Lesson 1	: Criteria for Safe Food .....	31
Lesson 2	: Hazards of Unsafe Food .....	35
Lesson 3	: Maintenance of Food Hygiene .....	37
Lesson 4	: Preservation of Food .....	39
<b>Unit 3</b>	<b>: Diet and Disease</b>	<b>41</b>
Lesson 1	: Dietary Management for a Hospitalized Patient .....	41
Lesson 2	: Dietary Management of Disease-I, Diet in Diabetes Mellitus .....	49
Lesson 3	: Dietary Management of Disease-II, Diet in Diarrhoea .....	55
Lesson 4	: Dietary Management of Disease-III, Diet in Cardiovascular Disease .....	59
Lesson 5	: Dietary Management of Disease-IV, Diet in Renal Disease .....	64
Supplement	: How to Prepare Diet Plan .....	67

# Unit 1: Basic Concepts of Nutrition and Dietetics

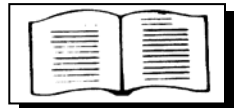
## Lesson 1: Basic Principles in Nutrition

### 1.1. Learning Objectives



At the end of this lesson you will be able to-

- ♦ describe the importance of nutrition in health and disease,
- ♦ list the effective nutritional interventions during nursing care, and
- ♦ distribute the roles of nurses as members of the health care team in nutritional care.



### 1.2. What is Food?

All living things need food. What we eat and drink to help keep us alive and well, to help us grow, develop, work and play is called food. Foods may be defined as a composite mixture of various chemical elements, which when taken, satisfies taste, and hunger. Food is one of our basic needs.

### 1.3. Why do we Eat?

We eat whenever we are hungry. Satisfying hunger is just one function of food. However, there are other important functions that we usually do not think about when we eat. Every time we move, even when we are at rest we use energy. Food is needed to provide energy for work and warmth for the body. Basically, foods have three important functions, namely-

- a. to give energy for all types of activity,
- b. to help the body to grow in size and repair when injured, and
- c. to protect the body from diseases.

What we eat and drink to help keep us alive and well, to help us grow, develop, work and play is called food

Ingested foods are utilized in our body after digestion, absorption and the process of metabolism. Foods contain chemical substances known as nutrients. *Nutrition is the science of food and nutrients pertain to an interrelationship to health and disease.* The modern science of nutrition helps us to understand the nutritive values of the wide variety of available foods and how each nutrient in food, in combination with others, serve specific functions for the growth, development and maintenance of our tissues.

## Basic Concepts of Nutrition and Dietetics

Food also supplies minerals and vitamins. The daily requirement for minerals and vitamins may be small in quantity but they play an important role in protecting organs and regulating their functions.

The human body requires six major nutrients called proximate principles of food. These are-

1. Carbohydrates
2. Proteins
3. Fats
4. Vitamins
5. Minerals, and
6. Water.

The first three substances can provide energy, which give us the capacity to work. Proteins form our body muscles, bones, blood, enzymes, some hormones, antibodies, organs, skins, hair and nervous system.

Nutrients can be divided into three categories according to their functions-

1. Energy giving
2. Body building and
3. Protective.

Most foods contain a mixture of the three categories of nutrients, but usually one type of food provides one of the categories of nutrients in a larger amount. The function of those nutrients becomes the main function of that food. For example, cereals such as rice and wheat have all three categories of nutrients but the energy giving nutrients are the most abundant therefore, we consider these foods as energy giving foods.

### Basic foods

Four kinds of foods are considered basic to meet the nutritional needs. These are also called basic foods-

1. Milk and milk products
2. Grains
3. Animal and vegetable protein and
4. Fruits and vegetables.

Commonly eaten foods can be broadly divided into three groups according to their functions. These are-



<i>Energy giving foods</i>	Cereals- rice, wheat, corn, or millet. Fats and oils. Starchy vegetables- potatoes, sweet potato. Noodles, <i>Payes</i> , <i>firni</i> sugar, molasses and honey.
<i>Growth promoting foods</i>	Milk, eggs, fish and meat. Pulses, peas, beans and nuts.
<i>Protective foods</i>	Vegetables (green leafy)-like <i>puishak</i> , <i>kalmishak</i> , <i>Patshak</i> , etc. Red- <i>lalshak</i> , etc. Yellow and orange-coloured fruits like-carrots, pumpkin, papaya, jackfruit, mango, tomato, orange, lemon, guava, pineapple, <i>amlaki</i> , black berry, <i>jambura</i> , <i>amra</i> , <i>kamranga</i> , etc.

#### 1.4. What should we Eat?

There is no such thing as an ideal diet. But to live a healthy life, we must eat a mixture of foods some of which give energy, some that promote growth and still others that protect us from disease. Thus, we should not be guided only by our taste but the quantity of each type of food. And the combinations can of course vary.

The main part of our diet consists of cereals like rice and wheat, which are the cheapest parts of the diet. Foods including pulses, beans and peas in Bangladesh are always eaten with the cereals. They give variety to the diet and make the cereals more palatable and nutritionally sound. Similarly, vegetables are also eaten with cereals and pulses to increase nutrients, palatability and variety. Foods of animal origin such as fish and meat are generally expensive and are a part of the diet available only to those who can afford it. Fats and oils are mostly used for cooking foods and greatly improve the taste of food.

A daily diet should be a mixture of-

- ◆ Cereals
- ◆ Pulses
- ◆ Vegetables (green, red and yellow)
- ◆ Animal foods- fish and meat

Animal foods are good for all but they are especially desirable for infants and young children

A mixture of vegetable and cereal foods is almost as good as animal foods for promotion of growth. Animal foods are good for all but they are especially desirable for infants and young children.

### 1.5. How Much Food Should we Eat?

How old we are, whether we are men or women and how physically active we are, makes a difference in the amount of food we need. Babies, young children and adolescents who are growing very fast need more food than other people. Women who are pregnant or breast-feeding also need plenty of nourishing food to help their bodies grow better. A person who has to do a lot of heavy work needs more food than someone who has to do little work. So, the amount of food served to each person should be proportionate to his requirements.

The two basic relationships between nutrition and disease are (a) in therapy (special dietary and nutritional care) and (b) in the prevention of disease (knowledge of nutrition in dietary practice e.g., knowledge on avoidance of excess intake of salt may help to prevent high blood pressure).

For an example, diet is an important part of diabetic management. Each person with diabetes needs to be provided with an individualized plan, appropriate counseling in the use of plan and follow up as necessary. Type I and Type II diabetes are managed differently. Young people are suffering from Type 1 diabetes and is managed by insulin and diet. In Type II, the adult onset diabetes can be managed by diet alone. If the diabetes is an obese person she is managed by reduction of weight (a low calorie diet and exercise).

### 1.6. The Role of Nurses in Nutritional Care

S/he should have special skills and knowledge so that the patient's needs can be met more efficiently regarding nutrition

Nurses play an extremely important role in nutritional care and clinical dietetics. The nurse must develop an understanding of this subject if his/she is to fulfill her function successfully. This aspect of science will increase his/her knowledge in this area and should be applied to increase his/her role in improving the nutritional care of patients. In health care, besides the physician, dietitians and patients, a nurse is an active and participating as core member. S/he should have special skills and knowledge so that the patient's needs can be met more efficiently regarding nutrition. A nurse shares the responsibility with a physician for assisting patients and explaining with a positive attitude about food. In addition, the nurse observes patients directly and records the amounts of foods and fluids they consume reports new diets or diet changes promptly, assesses their status and monitors patient's progress in physical condition and eating behaviour. Addition to those measuring the amount of urine

voided and evaluating patient response to dietary regimen are duties of the nurse.

Enteral and parenteral feedings are administered and monitored by nurses. In the case of intravenous fluids and electrolytes imbalance patients the nurse carries out the doctor's prescription. The nurse is frequently asked the patient's only source of nutritional and dietary information and advice. In any case, the nurse has the best opportunity to teach the patients and the principles of nutrition in the course of the day-to-day care.

The nurse is involved in the performance of the activities of daily living to assure the patient's comfort and to maintain optimal health care. S/he counsels with clients about their health status and the correct principles, procedures and techniques of health care. Because of the nurse's importance in the nutritional and dietary care of the patient, nurses may need a stronger background in nutrition and dietetics.



### 1.7. Exercise

1. What is food? What are the basic functions of food?
2. What is nutrient? What do nutrients do for our body?
3. Discuss the factors that determine our food intake.
4. What are the three categories of our commonly eaten foods?
5. What are the basic relationships between nutrition and disease? Give an example.
6. What are the roles of nurses in the nutritional and dietary management of the patient?

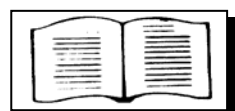
## **Lesson 2: Function, Daily Requirement and Source of Food: Micronutrients**

### **2.1. Learning Objectives**



At the end of this lesson you will be able to-

- ◆ describe the role of different micronutrients
- ◆ know daily requirement, source and
- ◆ know its deficiency related diseases.



### **2.2. Introduction**

By nutrient we understand about food or any substance that is needed to keep a living thing alive and to help it to grow by playing a vital role in metabolism. They are present in food in the form of chemical compounds. There are two types of nutrients-

1. Micronutrients and
2. Macronutrients.

### **2.3. Micronutrients**

Some nutrients are required in small amounts, usually in milligrams or micrograms for the reason they are called micronutrients. Although their needs are very small but they are very important. It is found that as many as 30% of the people of developing countries of the world suffer from deficiency diseases, which are related to these micronutrients. Micronutrients are also divided into two groups-

- a. Minerals and
- b. Vitamins.

#### **2.3.1. Minerals**

About 6.1% of our body is composed of minerals. Some of them are required in greater amounts, so they are called macrominerals (about 100 milligram or more) and some other required in smaller amounts (less than 100 milligram). The later are called microminerals or trace elements. List of both of these groups of minerals are given below-

<b>Macrominerals (&gt;100 mgm)</b>	<b>Microminerals (&lt;100 mgm)</b>
1. Calcium	1. Iron
2. Sodium	2. Copper
3. Potassium	3. Iodine
4. Magnesium	4. Zinc
5. Phosphorus	5. Cobalt
6. Sulphur	6. Manganese
7. Chlorine	7. Fluorine

The deficiency diseases, which are common in our country, are due to calcium, iron and iodine. So, we will discuss about some of the important micro and macro minerals.

### **2.3.1.1. Calcium**

Among the important minerals, calcium is essential one and its presence is more than any other mineral in our body. Calcium is the main essential macromineral for the growth and development of bones and teeth. It is insoluble in water.

#### **Functions of Calcium**

1. Along with phosphorus it helps in the development of the frame of body, bones and teeth and gives it the structural strength.
2. It is necessary for the development of each cell of the body.
3. It is an important element of blood coagulation.
4. It helps in contraction and relaxation of heart muscle, and in maintenance of the heart rate.

#### **Deficiency Diseases**

In calcium deficiency, children suffer from rickets. Besides this growth of the infant will be hampered and eruption of teeth will be delayed. In pregnant mothers, deficiency of calcium causes osteomalacia. As a result, bones become soft and undergo easy fracture.

### Daily Requirement of Calcium



Adult male/female	450 mg
Children	500-600 mg
Teenage girls	650 mg
Pregnant women	1100 mg
Lactating mothers	1100 mg

### Source

Milk and milk products, curd, cheese and small fish bones, cartilage are the richest sources. Pulse, prawn, ladies finger (okra), green leafy vegetables such as *kachu shak*, *palang shak* also contains calcium.

### 2.3.1.2. Iron

For human body iron is an essential mineral but its requirement is very small. About 4 (four) gm iron is present in an adult man among which about 70% are present in the hemoglobin of blood. Iron is stored in liver, kidney and in bone marrow.

### Functions of Iron

1. It is needed for the development of haem of blood haemoglobin.
2. It helps in carrying oxygen to the cells of our body.
3. It acts as a part of many enzymes used in oxidation and reduction.
4. It is an essential element for transfer of electrons in biochemical processes.
5. It takes part in the formation of the enzyme cytochrome required for each cell of our body.

### Deficiency Disease

1. Production of blood will be hampered and anaemia will develop.
2. Deficiency of iron will cause loss of strength and life expectancy will decrease.

### Daily Requirement of Iron



Adult male	9 mg
Children	10 mg
Teenage boy (13-18y)	18 mg
Teenage girl (13-18y)	20 mg
Adult female	28 mg
Pregnant woman	33 mg

### Source

Meat, liver, egg, pulse, *gur*, fishes like *tangra*, *topshe*, *Rupa patia* etc., dry fish, dried mango, green mango, black *kachu shak*, cauliflower, leaf of *shalgam*, *data shak*, other *shak* contains lot of iron.

### 2.3.1.3. Iodine

Iodine is an important mineral for thyroid gland but its requirement is very little. About 15–20 mg of iodine is present in an adult man among which 70-80% is concentrated in the thyroid gland.

### Function of Iodine

Iodine is an essential part of a specific human thyroid gland, which help in the production of thyroxine hormone. Thyroxine plays an important part in both the development of physical and mental health.

### Deficiency Disease

1. Due to deficiency of iodine there may be abortion and still-birth. An infant may be born with mental retardation, deaf and a short stature. Such children are often diagnosed as cretins.
2. Development of child will be hampered, goiter may develop.
3. In adults it may cause different types of goiter, lack of physical strength.

### Daily Requirement

Daily requirement of iodine is 150 microgram (0.15 mg) in the adult.

### **Source**

Chief source is sea food (seaweed) or sea fish (fresh and dried fish). We can get iodine from salt, which are mixed (fortified) with iodine. This type of salt is produced by mixing of 4 parts of Potassium iodide with 1 lac parts of salt.

#### **2.3.1.4. Phosphorus**

About one percent of our body weight is phosphorus. In the human body, 80% is present in the bones and teeth.

### **Functions of Phosphorus**

1. Both phosphorus and calcium help in development of bones and teeth.
2. It helps in the metabolism of carbohydrate and fats and thus helps in development of body strength and maintenance of temperature.
3. It is an essential element for nucleic acid.

### **Deficiency Disease**

1. It hampers the development of bones and teeth.
2. It may cause weakness and bone pain and eventually lead to a deficiency of calcium.

### **Daily Requirement**

Daily requirement is same as calcium. It is about 800 mg.

### **Source**

Fish, Meat, Egg, Cheese, Milk, Nut, Pulse, Seed and seed containing foods.

#### **2.3.1.5. Sulphur**

Protein is present in all animals and all proteins contain some amount of Sulphur.

### **Functions of Sulphur**

1. Most of the Sulphur is an essential part for two important amino acids- methionine and cystine.

2. It is important for different enzymes and takes part in many of their metabolic activities.
3. It is also important for the production of thiamine and carotene.

### **Deficiency Disease**

Due to deficiency of sulphur containing amino acids, there could be a compromise in the quality of protein consumed.

### **Source**

Fish, Meat, Egg etc.

### **2.3.1.6. Copper**

Copper is a natural elements that is an essential micronutrients to ensure the well being of all human. It plays a vital part in the development and performance of the human nervous and cardiovascular system, as well as the skin, bone immune and reproductive systems.

### **Functions of Copper**

1. For metabolism of iron and in the development of blood, copper is necessary.
2. It is present in different enzymes, which is important for production of haemoglobin, metabolism of glucose and production of energy.

Daily requirement of copper for an adult man is 2 mg.

### **Deficiency Disease**

Due to its deficiency, there is anaemia and defect in the framework of the body. Hair may turn into gray colour and there may be failure of reproductive capacity.

### **Source**

Meat, Liver, Heart, Brain, Kidney, Shellfish, Nut, Pulse are good sources of copper. Breast milk also contains copper.

### **2.3.1.7. Zinc**

Zinc is one of the most important minerals consumed in the human diet. Our body contains 2.5 gms of zinc at any moment in our life.

### **Functions of Zinc**

1. Zinc is added with insulin hormone, which is secreted from the pancreas and helps in the metabolism of carbohydrate.
2. The important female hormones, which are related with the reproductive cycle increases its activity in the presence of zinc.
3. Zinc is necessary for maintaining the balance between the carbon dioxide and carbonic acid present in the muscle of our body.
4. It increases the activity of other enzymes.
5. Zinc is useful for the normal development of genital organs, prevention of anaemia, for healing of wounds and physical development of the body.

### Deficiency Disease

Due to deficiency of zinc there may be defect in growth and lack of sexual functions.

### Daily Requirement of Zinc



Children (below 10 years)	10 mg
Adults	15 mg
Pregnant women	20 mg
Lactating mothers	25 mg

### Source

Zinc is found in all animal and plant sources but fruits, vegetables and refined foods contain less amounts of zinc.

#### 2.3.1.8. Sodium

Greater part of the sodium of human body is present in the extra cellular fluid. Main function of sodium is to maintain the fluidity of the body and maintain the balances between acid and base. Due to deficiency of water there could be deficiency of sodium which may lead to decreased hunger, contraction of the muscle, mental excitement, and coma and may even lead to death.

Sodium is present in all natural sources but main source is the table salt.

#### 2.3.1.9. Potassium

Amount of potassium in our body is same as sodium but it is present in the intracellular fluid. It is necessary for the development of fat free muscle. There could be a deficiency of potassium in conditions of deficiency of protein due to fasting or due to trauma. This could cause weakness of the muscle or paralysis, normal body movement would be restricted, abdomen becomes distended due to deposition of gas and at the last stage, activity of the heart would stop thus leading to death.

### Source and Requirement of Potassium

For an adult man daily requirement is 2.5 mg. Potassium is present in almost all foods. But fat free muscle and milk are the good source of potassium.

### 2.3.2. Vitamins

Second important micronutrients for our body are the vitamins. Lack of vitamin disturbs metabolism. So, there is lack of heat development and lack of resistance for the prevention of disease. Food contains different types of vitamins. According to solubility, vitamins are divided into two groups -

1. Fat soluble vitamins and
2. Water soluble vitamins

A list of the two types of vitamins and their characteristics are given below-



A. Fat Soluble Vitamins	B. Water Soluble Vitamins
1. Vitamin A	1. Vitamin B complex i. Thiamine ii. Riboflavin iii. Niacin iv. Pantothenic acid v. Pyridoxine vi. Biotin vii. Folic acid viii. Choline ix. Cyanocobalamine
2. Vitamin D (Calciferol)	
3. Vitamin E	
4. Vitamin K	
	2. Vitamin C
<b>Characteristics</b>	
<b>Fat Soluble</b>	<b>Water Soluble</b>

Heat and water do not destroy it, but sunlight does. It can be stored at airtight container.	These are destroyed by heat and during cooking. They are water-soluble.
It can be stored in the liver for long time. It is not water-soluble and is not excreted in the urine.	Destroyed by sunlight and air. Except Vit. C. The others are stored in the liver in small amounts/ excreted in the urine.

### 2.3.2. Fat Soluble Vitamins

#### i. Vitamin A

Vitamin A is a colour base, water insoluble but fat soluble and heat resistant vitamin. But by heating for a long time, all vegetable oils containing Vitamin A is oxidized and destroyed. About 90% of the Vitamin A present in the body is stored in the liver.

#### Functions of Vitamin A

1. Helps in maintaining the normal vision.
2. Maintains the smoothness of the skin.
3. Helps in growth and development.
4. Helps in development of bones and teeth.
5. Helps in maintaining the reproductive function.
6. Helps in preventing infectious diseases.

#### Deficiency Disease

1. Children suffer from night blindness finally leading to complete blindness.
2. Skin becomes dry and rough
3. Hampers development
4. Decreases the severity or helps in the prevention of diseases.

#### Daily Requirement



Adult males	5000 IU
Pregnant women	6000 IU
Lactating mothers	8000 IU
Children (1-12 yrs)	2000-4500 IU

#### Source

Among the animal sources, fish liver oil, fish oil, liver, butter, egg yolk, kidneys are rich sources. Animal fats are the richest source of vitamin A. Vegetables and fruits do not contain vitamin A but some contain carotene, which is converted into vitamin A in the small intestine. Yellow, green leafy vegetables and some fruits contain a lot of carotene. Some good examples are *lalshak*, *kachu shak*, *palong shak*, *pui shak*, pumpkin, carrot, ripe mango, papayas, jackfruit, yellow sweet potato and other vegetables.

## **ii. Vitamin D (Calaferol)**

Another name of it is cholecalciferol.

### **Functions of Vitamin D**

1. Vitamin D is necessary for the metabolism of calcium and phosphorus.
2. It helps calcium and phosphorus in the development of bones and teeth.

### **Deficiency Disease**

1. There is no proper utilization of calcium and phosphorus without vitamin D. As such, children suffer from rickets. In this disease bones become soft and bend.
2. Elderly people suffer from osteomalacia.
3. Eruption of teeth is delayed and children take a longer time to start walking.

### **Daily Requirement**

Adult male = 2.5 µgm or 40 IU

### **Sources**

Vitamin D is absent in plants. Only animal foods such as – fish oil, fish liver oil, butter, egg yolk, milk, milk product contain vitamin D. Ultraviolet rays of sunlight falling on the skin can form a good source of Vitamin D for the body.

## **iv. Vitamin E**

Another name of it is tocopherol.

### **Functions of Vitamin E**

1. As an antioxidant, it protects Vitamin A, Carotene and unsaturated fatty acids from oxidation and
2. It increases the reproductive capacity and prevents impotency.

### **Daily Requirement**

About 5-10 mg/day

### **Source**

Cod liver oil, Nuts, Wheat, Sunflower oil, Soybean oil, Palm oil are all good sources of vitamin E.

### **iii. Vitamin K**

Vitamin K is known as a blood-clotting vitamin. It helps in quick blood coagulation and stops bleeding. It helps in the production of the clotting factor in the liver, which helps in clotting of the blood when there is a wound. Usually there is no deficiency of Vitamin K because the intestinal flora produces it. It is easily produced from the food. If pregnant women suffer from its deficiency, there could be bleeding problems during delivery.

### **Daily Requirement**

Daily requirement for adult is 30 µgm.

### **Source**

Green leafy vegetables, cauliflower, cabbage, *palong shak*, liver and egg yolk are good sources.

### **2.3.2. Water Soluble Vitamins**

Water soluble vitamins are vitamin B complex and vitamin C.

List of vitamin B complex has been given previously, here is including important functions, deficiency of disease, source and reassures and of some vitamin one describe below.

#### **i. Thiamine**

1. Thiamine acts as a co-enzyme especially as an active part of Thiamine phosphate, which helps in the metabolism of carbohydrates.
2. It is needed for the metabolism of fat and protein.
3. It helps in the normal growth of the body.

### Deficiency Disease

Small amounts of its deficiency disturb the carbohydrate metabolism, which may cause anorexia, nausea, weakness, mental anxiety. Although rarely seen now-a-days, long-term deficiency of Thiamine is known to cause beriberi.

### Daily Requirement

For each 1000 kcal of energy consumed, 0.5 mg is the suggested daily requirement. Thus the following is the suggested requirement-



Males	1.9 mg
Females	1.0 mg
Pregnant women	1.1 mg
Lactating mothers	1.0 mg

### Source

Unpolished boiled rice, wheat, fat free meat, liver, egg, yeast, fish, milk, and beans are the sources.

### ii. Riboflavin

Vitamin B<sub>2</sub> is yellowish orange in color, which is slowly soluble in water but quickly soluble in an alkali solution. It is not destroyed by heat but can be destroyed from air and sunlight.

### Function

1. It is a part of many enzymes and co-enzymes. These enzymes and co-enzymes take part in carbohydrate, protein and fat metabolism and thereby help in the production of energy.
2. Helps in normal development and for healthy life. It is considered as an essential nutrient throughout the whole life.

### Deficiency Disease

There is no particular disease, which can be attributed to its deficiency. Usually it causes cheilosis, glossitis, and angular stomatitis. These signs are often attributed as ariboflavinosis.

### Daily Requirement

For each 1000 kcal of energy consumed, 0.6 mg is the suggested daily requirement. Thus the following is the suggested requirement-



Males	1.5 mg
Females	1.1 mg
Pregnant women	1.3 mg
Lactating mothers	1.5 mg

### Source

Milk, Egg, Liver, Fish, Meat, unpolished boiled rice, Pulse, Nut and Green Leafy Vegetables and fruits are good sources.

### iii. Niacin

Nicotinic acid (nicotinamides) is also called niacin. It is soluble in water. It is not destroyed by heat, air, light, and alkali and by oxidation. One of its important characteristics is that inside the body, niacin is converted into an important amino acid called Tryptophan.

### Functions of Niacin

Niacin is an essential part of two co-enzymes, which are indirectly needed for production of energy from carbohydrate metabolism and takes part in the production of fat from carbohydrate.

### Deficiency Disease

Deficiency of niacin causes pellagra, which is manifested by weakness, weight loss, and skin disease in the exposed areas of the body.

### Source

It is found in both plants and animals. In addition to that Meat, Liver, Wheat, Pulse, Nut, Seed oil and vegetables contain lots of niacin. Peanuts are a very good source for niacin.

### Daily Requirement



Male	18.2 mg
Female	13.2 mg
Pregnant women	15.1 mg
Lactating mother	18.1 mg

### iv. Folic Acid

Folic acid also called Folicin. It acts as a co-enzyme and helps in protein metabolism. Its deficiency causes anaemia and may changes the shape of RBC and its quantity.

### Daily Requirement



Children	100 mg
Women	200 mg
Pregnant women	400 mg
Lactating women	300 mg

### Source

Liver, Yeast, Ground nut, Pulse, Green leafy vegetables, Rice and Flour etc.

### v. Vitamin B<sub>12</sub>

Another name of it is Cyanocobalamine. It acts as a co-enzyme. Due to its deficiency there is change in the shape of RBC and there is a decrease in its amount leading to a condition known as pernicious anaemia.

### Daily Requirement



Children	1.0 µgm
Adult males	2.0 µgm
Pregnant women	3.0 µgm
Lactating mothers	2.3 µgm

### Source

It is absent in plant source. Animal source such as – Liver, Brain, Heart, Kidney, Meat, Fish, Egg, Milk and Milk products contain lots of vitamin B<sub>12</sub>.

### vi. Vitamin C

Another name of vitamin C is ascorbic acid. It has a sour taste. It is easily soluble in water and destroyed by oxidation in the presence of air. It is not stored in the liver, as such; we have to take vitamin C on a daily basis.

### Functions of Vitamin C

## Basic Concepts of Nutrition and Dietetics

1. Vitamin C produces and maintains protein collagens. Collagens act as a binding substance between bones, cartilage and skin.
2. It helps in the metabolism of fat, protein and amino acids.
3. It uses iron and copper in the production of blood.
4. It makes the skin smooth and bright.
5. Keeps the teeth and gum healthy.
6. Helps in healing wounds.
7. Prevents from infectious diseases.

### Deficiency Disease

Although frank cases are rarely seen now-a-days, long-term deficiency causes scurvy.

### Daily Requirement



Children	20 mg
Adult	20 mg
Pregnant and lactating mother	50 mg

### Source

Fruits like lemons/limes which are sour, contain vitamin C such as *Amlaki*, Guava, Lemon, Orange, *Amra*, Pineapple, Mango, Blackberry, Tomato, Green Chilli, Sprouted seeds, Lettuce, Coriander Leaf, *Pudina* and other green leafy vegetables.



### 2.3. Exercise

1. Define macro and micronutrients.
2. Name deficiency diseases, which are most prevalent in Bangladesh and suggest preventive measures.
3. What are antioxidant vitamins and minerals?
4. How much iron, iodine, Vit A, C and E do you need every day?

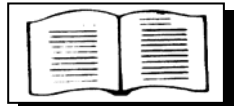
## Lesson 3: Desirable Body Weight and Energy Requirement

### 3.1. Learning Objective



At the end of this lesson you will be able to-

- ♦ calculate desirable body weight of individuals,
- ♦ calculate energy requirement of individuals.



### 3.2. Methods

There are different methods to determine desirable body weight (DBW) and nutritional status-

#### 1. Tannhauser's Method-

- a. Measure height in centimeters,
- b. Deduct 100 from the factor,
- c. Take off 10% from 'b' (b=above line) and result will be DBW in Kg,
- d. To obtain range of DBW, add and subtract 10% from 'c' (c=above line).

#### 2. Adopted Method -

- a. For 5 feet, use 105 lbs and then for every inch above or less than it, add or subtract 5 lbs.
- b. Divide the result in 'a' by 2.2 to get the result in kg,
- c. To obtain the range, do the same as mentioned in the Tannhauser's Method.

#### 3. References/Standard-

- a. The Standard Tables for Weight for Age and Height for Age for Boys and Girls-
  - i. See from the tables one ideal weight and height according to age.
  - ii. Compare actual weight and height with standard to identify nutritional status.
- b. Use the index-weight 'Weight for Age' to identify nutritional status by using Gomez classification.

## Basic Concepts of Nutrition and Dietetics

< 60 = 3 <sup>rd</sup> degree malnutrition	Degree of malnutrition  $\frac{\text{Weight in}}{\text{Age}}$
< 75 = 2 <sup>nd</sup> degree malnutrition	
< 90 = 1 <sup>st</sup> degree malnutrition	
90-110 = Normal	
111-120 = Over weight	
> 120 = Obese	

There are also different ways to estimate Total Energy Requirement (TER) per day. However, recent suggestions are to calculate the total energy (calorie) expenditure (TEE) as an indirect (and more accurate) measure to calculate the TER. So we find that the nutritional requirement is based on the output.

The supply of energy ensures the output that varies in different conditions. The various outputs include-

1. Provision for the basal body functions. These functions are often not appreciated (felt) and includes activities like the constant beating of the heart, respiratory movements, control of body temperature, etc.
2. Provision for the thermogenic action of food. This depends on the quality (type) of food consumed and in simple terms is the energy required for the digestion of the food itself. The term **specific dynamic action (SDA)** is also synonymously used.
3. Provision for the physical activities charts are available for almost all activities. A very short list is provided below. Thus the degree of activity and duration are important.

### Factor for Nature of Activity

Bed rest	1.2
Sedentary	1.3
Light	1.5
Moderate	1.7
Heavy	2.0

4. Provision for certain situations like pregnancy, pathological states (again charts are available and a short list is included below where).

### Factor for pathological state

Minor Surgery	1.2
Skeletal trauma	1.3
Major sepsis	1.6
Severe burn	2.1

If we are to calculate the energy requirements of any particular individual, we need to know the following:

1. Body weight
2. Age
3. Physical/pathological state
4. Nature of activity
5. Composition of food consumed

These are then transformed in terms of total energy expenditure. Allocations are then made from different macronutrients (which will supply energy) to meet the TEE. While calculating the energy requirements, it is desired that the ideal weight of the individual is met rather than the actual weight. This prevents over or under estimation of the requirements. Detailed ideal weights can be sought from standard tables found in nutrition textbooks. A short table from the National Research Council (USA), factors for nature of activity and factors for pathological states are provided in the following tables -

Median Weight for Age and Recommended Energy Intake



Category	Age (Yrs)	Wt in Kg	Average Energy Allowance/Kg
Infant	0.0 – 0.5	6	108
	0.5 – 1.0	9	98
Children	1.0 – 3.0	13	102
	4.0 – 6.0	20	90
	7.0 – 10	28	70
Men	11 – 14	45	55
	15 – 18	66	45
	19 – 24	72	40
	25 – 50	79	37
	51+	77	30
Women	11 – 14	46	47
	15 – 18	55	40

Category	Age (Yrs)	Wt in Kg	Average Energy Allowance/Kg
	19 – 24	58	38
	25 – 50	63	36
	51+	65	30
Pregnant			+ 300 cal from 2 <sup>nd</sup> trimester
Lactating			+ 500 Cal in 1 <sup>st</sup> yr

To calculate the Total Energy Expenditure (TEE) one has to first calculate the Basal Energy Expenditure (BEE). The calculation can be done using the following equations-

$BEE = \text{Ideal Weight} \times \text{Recommended calories per kg Ideal Weight.}$

$TEE = (BEE \times \text{Factor from Activity} + 0.1 \times BEE + \text{Allowance for pregnancy, lactation}) \times \text{Factor for pathological state.}$

To determine the energy requirement, one needs to find out the protein and fat requirements too. This is essential because a portion of the calories will be coming from the protein and the fat. A rough estimate of the protein requirement is 0.8 gm/kg of the body weight and for fat it is said that 15 – 30% of the calories need to be supplied from this source.

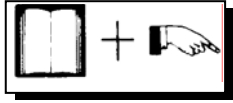
### 3.3. Exercise

Take for example a woman aged 22 years who is in the 2<sup>nd</sup> trimester of pregnancy and whose actual weight is 45 kg. Determining her stature, her ideal body weight is determined to be 55 kg and being a light worker, her physical activity is determined to be 1.5. Her recommended calorie per kg ideal weight is also determined to be 26.

1. Determine the protein requirement and estimate the calories supplied there from.
2. Allocate the ration from fat keeping the quantity nearest to the minimum of 15–30% range. Estimate the calories supplied there from.
3. Subtract from TEE the sum of calories supplied from sources 1 and 2 and allocate the remaining calorie to carbohydrate.
4. Calculate your actual wt. by comparing with your DBW using different methods.
5. If you are underweight/overweight, recommend attaining DBW. If within desirable range, how can it be maintained?

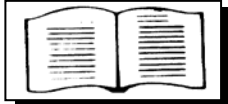
## Lesson 4: Planning Diet

### 4.1. Learning Objectives



At the end of this lesson you will be able to-

- ♦ describe the standards used in planning normal diets; and
- ♦ list and give examples of the basic factors that must be considered in planning a diet.



### 4.2. Principles of Diet Planning

A normal diet should be adequate and balanced. The principles of a balanced diet are ways to plan meals by combining foods from different groups. These principles help families to make their meals more varied and nutritious. The use of the basic food groups facilitates diet planning and allows variations for individual preferences, cultural habits and budgets. Diet planning can be simplified by using the basic food groups. When planning a nutritionally balanced diet, several guidelines are important.

*A person should-*

- ♦ include recommended amounts of each of the basic food groups.
- ♦ utilize accessory foods to increase calories (if needed), and
- ♦ take into account foods or meals eaten outside the home.

Some other important guidelines include-

- i) food should be enjoyed,
- ii) eaten at least three times a day,
- iii) presented attractively and with varieties and
- iv) within a budget.

Attention should be paid not only to the supply of essential nutrients for the normal processes of the body, but also to the amount of each nutrient in relation to the others. Difficulties arise in the formulation of a normal diet because of the complex interactions existing between nutrients. For example, ascorbic acid is needed for the conversion of iron into an absorbable form and a deficiency of vitamin C may result in its association with a deficiency of vitamin A and so forth. Interrelationships exist not only among the minerals but also among the vitamins, between vitamins and proteins, between proteins and carbohydrates, and between

vitamins and fat. Other multiple relationships also exist; hence the need for a varied diet in order to ensure complete nutrition in the diet. Other factors like regional availability of foods, socioeconomic conditions, taste preference, food habits, and age of the family members, storage and preparation methods and facilities are also pre-requisites for planning a diet.

Besides nutrients, foods contain fiber.

Fiber is not a nutrient but it forms a very important aspect of good nutrition/health.

Proper diet is the best general measure in all infectious diseases

### 4.3. What Constitutes an Adequate Diet?

The Recommended Dietary Allowances (RDA) per day for a specific nutritional status, the amount of energy and nutrients recommended for men and women of different age groups-pregnant women, lactating women; infants; children and adolescents of various weights will vary. Consumption of the amounts of each nutrient recommended in the table not only prevents deficiency diseases but also allows for a margin of safety to sustain a vigorous and healthy life style. The standards have been revised to confirm with current research on the nutritional needs of people.

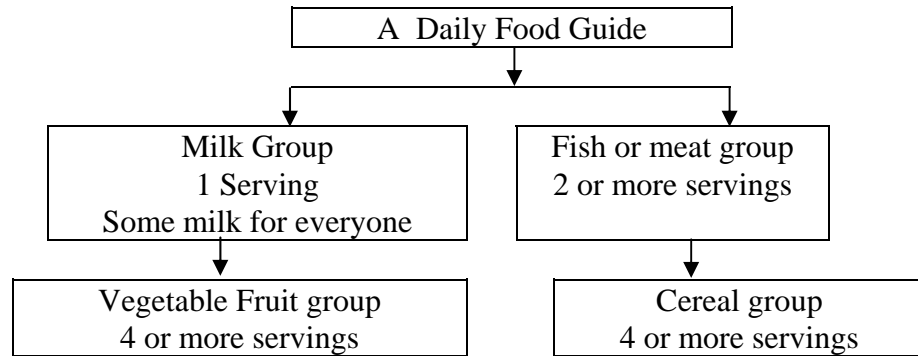
The recommended dietary allowances are useful in the planning and analysis of diets of individual groups and with proper understanding and use may be helpful in planning an adequate diet and evaluating the nutritional status of an individual.

Proper diet is the best general measure in all-infectious diseases. Good nutrition means good defense against infection.

### 4.4. Daily Food Guide

Body building foods such as meat, fish, poultry, eggs, cheese, milk, beans, and nuts supply the greatest amount of the important good quality proteins. They are also rich in B vitamins and iron especially if liver and other internal organs are included in the diet. For children, these foods are important for growth, and for adults, they maintain existing tissues. Milk if provided in the diet, is an excellent source of calcium, protein, and vitamin A and B.

### A Daily Food Guide



### Examples of Serving Size

Milk 1 serving = 1 glass = 240 gm = medium 2 cups

Meat/fish 1 serving = 30 gm

Vegetable 1 serving =  $\frac{1}{2}$  cup,  $\frac{1}{4}$  cup, 1 cup

Fruits 1 serving =  $\frac{1}{2}$  cup,  $\frac{1}{4}$  cup, 1 cup

Oil 1 serving = 1 t.s.f. = 5gm

Egg 1 serving = 50 gm

Dhal 1 serving = 30 gm.

The daily food guide presents one way to select food. With this anyone can get the nutrients needed from everyday foods. In using the guide one selects the main part of his diet from the four broad food groups. To this one adds other foods as desired to make meals appealing and satisfying. The additional foods should add enough calories to meet energy needs, which will vary widely for different members of the family.

The additional foods should add enough calories to meet energy needs, which will vary widely for different members of the family

Energy foods in the form of carbohydrates fats comprise the major portion of our diet. Carbohydrate foods are mainly starches in the form of cereals like rice, breads, cakes, noodles, and root crops. They also provide vitamins B complex and iron and part of the vegetable proteins. Sugars, which are the concentrated sources of energy, are found in a of forms in molasses, sugar, and honey and fruit juice. Fat-rich foods like visible fats in the form of butter, margarine, and coconut milk and the invisible fats of meat fish; eggs, milk and milk products become an important source of energy and add substantially to the taste of the food.

Green leafy and yellow vegetables are rich sources of vitamin A, riboflavin, and vitamin. Citrus fruits supply a generous amount of vitamin C. Other fruits and vegetables are also contributors of varying amounts of minerals and vitamins, fiber and calories but the best sources of pro-vitamin A (Beta-carotenes) are the green leafy and yellow vegetables.

Water is supplied directly through drinking water and from the water content of foods and other liquids.

#### 4.5. Planning the Diet

There are many ways to plan a diet that will be nutritious. Adequate foods should be selected from each category of the four basic food groups e.g. one part from milk and milk products, two parts from fish and meat, six parts from cereals and at least four parts from vegetables and fruits of which one part should be from vitamin C rich, one part from carotene rich and two to three parts from others fruits and vegetables.

A family should have at least-

- a breakfast
- a midday meal
- an evening meal
- and if possible two snacks in between.

Specifying amounts of foods in the daily diet such as the Recommended Dietary Allowances when followed is a safe procedure. The recommended daily amounts of nutrients are references to standards of nutritional intake. Expert committees recommend that healthy people should eat these amounts of nutrients on an average day.

The recommendation will normally be more than what is required by healthy people, that is, most people's requirements are less than the recommended amount.

Sick people have requirements not covered by the recommendations. For example, with bed rest, energy requirements are reduced; with fever they are increased. Losses of several nutrients are increased in different ways by illness, such as protein loss in nephrotic syndrome, potassium loss in diarrhoea, iron loss with bleeding. For total enteral and parenteral nutrition, the requirements are different; absorption is 100%, but minor vitamins and trace elements cannot be provided by infusion and have to be provided in the infusion solution.

To plan a meal, a dietary pattern based on the guide is suggested below-



- i. Breakfast** : Fruit or fruit juice  
Egg or a protein rich substitute  
Cereal/wheat  
Butter or margarine
- ii. Snacks** : Juice or milk  
Cereals or root crop
- iii. Lunch** : Cereal or root crop  
Meat or fish or other protein-rich combinations  
Green leafy or yellow vegetables, preferably in the form of salad (at least some should be raw)  
Fat or oil  
Fruit or dessert
- iv. Supper** : Cereal or root crop Meat or fish or pulse  
Vegetables  
Fruit or dessert

To facilitate acceptance of the diet, aesthetic factors such as texture, color, palatability and variety must also be considered.



#### **4.6. Exercise**

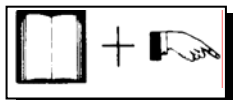
1. What are the factors to be considered in planning a normal diet?
2. Discuss about the basic foods: (This could be for a 1 year or second year child- you need to be specific).
3. Give a guide to planning a meal for an adult.
4. You don't want them to recite what they read, rather, give them a little scenario, and ask them to plan a week's meals e.g.

A 15-year-old girl has a broken leg and is having an infection. What meals would you offer her? What factors would you consider in your planning?

## Unit 2: Food Safety and Hygiene

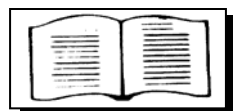
### Lesson 1: Criteria for Safe Food

#### 1.1. Learning Objective



At the end of this lesson you will be able to-

- ◆ describe safe preparation of storage,
- ◆ discuss ways that nurses can help to prevent food borne illnesses, and
- ◆ describe and give examples of safe food.



#### 1.2. Food Spoilage

Food is frequently subjected to chemical and biological contamination in a number of ways and this has a direct, significant and important bearing on public health. There is clear evidence now that a vast amount of human diseases and suffering is directly due to the consumption of infected and/or contaminated food.

Bacteria grow in food very easily, and so contamination can occur rapidly. Sometimes organisms are already present and at others times these are introduced during the storage, preparation or serving of food. Moulds, fungi, bacteria and viruses causing diseases can alter the quality and contaminate food and water.

Processing and preparation can make food safe to eat by destroying some microorganisms or natural toxins. Food is processed for-

- ◆ Storage and preservation,
- ◆ Prevention of disease,
- ◆ Improvement of digestibility and nutritive value,
- ◆ Palatability,
- ◆ Destruction or reduction of toxic components,
- ◆ Change the physical properties of food, and
- ◆ Fortification.

There is clear evidence now that a vast amount of human disease and suffering is directly due to the consumption of infected and contaminated food

All foods are made of chemicals. Some are necessary, some have no effect, and some are harmful. These chemicals may be natural constituents of food, or they may be added intentionally or unintentionally. Absolute safety does not exist; no food is totally harmless. Scientific research helps us to make wise decisions about safe versus unsafe food components. All

foods are of animal or vegetable or of a combined origin. They are made of cells, which contain numerous enzymes and biochemical compounds. Microorganisms also inhabit foods. These multiply after slaughter or harvesting and nearly all our basic foodstuff deteriorate rapidly because of autolytic decay (self-destruction) and microbial activity. Foods can become dangerous unless we treat them in some way. Cereal grains are the major exception. They have a low water content and normally will keep for years when dry and at ambient temperatures.

### 1.3. Prevention of Food Borne Illness

Handling, storing and preparing foods properly will prevent them from spoiling and losing nourishment. Preventing food borne illness is usually a matter of sanitary food production and handling techniques. Foods are normally processed to destroy pathogenic organisms and to prevent the growth of harmful agents. The goal in food preservation is to preserve and maintain the optimum qualities of colour, flavour, texture and nutritive value.

Food that is dirty or spoiled may cause diarrhoea and vomiting (food poisoning). Flies, dust and dirty hands can contaminate food. Food handlers' clothing and hands should always be clean. In case of refrigeration, foods should also be covered both inside and outside of the refrigerator. This prevents them from being contaminated by flies or other insects, drying out, absorbing odours, or having anything spilled on them. For preventing food-borne illnesses we need food to be preserved through processes such as-

1. Heating
2. Freezing
3. Drying
4. Fermentation
5. Use of chemical preservatives
6. Irradiation, and
7. Safe food handling procedures.

In our hot climate, food spoils easily when not cleaned and stored properly

In our hot climate, food spoils easily when not cleaned and stored properly. In health care, safe food handling procedures are of paramount importance. Consumers not following rules for safe food handling cause most food borne illnesses. Following the rules of food hygiene should prevent food poisoning:

- ◆ People known to be harboring infections should not be allowed to handle foodstuffs in the critical stages of preparation and distribution.
- ◆ Always wash hands before and after handling food.
- ◆ Handle food as little as possible. Never touch utensils in areas that will come into contact with the mouth.
- ◆ Be sure to cover the mouth and nose during coughing or sneezing when working with food.
- ◆ To prevent foods from being contaminated, keep them covered until served to the patient.
- ◆ Keep perishable foods frozen or refrigerated immediately after purchase, to prevent multiplication of bacteria already present. The refrigerator should be kept clean and foodstuffs must be placed in it in such a way that cold air can freely circulate around items. This is to make sure that the foodstuffs kept in the fridge are cooled rapidly and kept cold. No spoiled food should be placed in a refrigerator as it infects other foods too. Discard perishable items after 48 hours.
- ◆ Cook food for a sufficient length of time and at a high enough temperature to destroy bacteria. Meat should be cut into small pieces to ensure thorough penetration of heat. If required in large chunks, meat should be roasted or pressure-cooked.
- ◆ Do not keep food exposed, especially after cooking. If the food is to be consumed later, it should be promptly cooled and put in the refrigerator.
- ◆ If food has been refrigerated for a long time, it should be reheated before consumption.
- ◆ Hot food should be kept above 140<sup>0</sup> F until served; cold food should be kept below 40<sup>0</sup> F until served. The bacteria count can double every 15 to 30 minutes in cooked foods that are allowed to cool to between 45<sup>0</sup> F and 140<sup>0</sup> F. *Do not leave cooked food longer than one hour at room temperature.*
- ◆ If a food does not look or smell right, throw it out.
- ◆ Keep food storage, cooking and service areas clean and free from insects and rodents.

#### 1.4. Some Criteria to Help Make Food Safe



Type of Food	How to Handle and Store
Cereals	Keep cereals dry in clean, covered containers. Store baked products in a cool, dry place to prevent mould.
Starchy fruits, roots and tubers	Reap carefully, do not bruise or cut skins. Do not wash until ready to use. Store in a cool place and do not allow sprouting. Keep tubers in a dark place to prevent sprouting.
Legumes and nuts	Clean and dry very well before storing. Store in clean, dry pans with tight covers.
Vegetables (a) dark green leafy vegetables	Reap or buy leafy vegetables early morning or later afternoon when needed and try to avoid storing. Place in plastic (food grade) bags before refrigeration.
(b) Yellow vegetables	Store in a cool place or in plastic bags in refrigerator to prevent shriveling.
Fruits	Use fresh fruits quickly the same day as you buy it, or freeze it.
Foods from animals	Keep cool and covered until ready to use. Refrigerate if necessary.
Milk	Carry and store fresh milk in dark bottle or covered pans to keep out light. Light destroys riboflavin, an important vitamin available in milk. Keep pasteurized milk chilled. Keep powdered milk in air-tight cans.
Eggs	Clean eggs well. Store in a cool place.
Fats and substitutes	Place butter/margarine in a dish containing water or place in refrigerator.

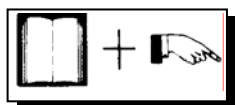


#### 1.5. Exercise

1. Why do we process food?
2. How are nursing personnel responsible for preventing food poisoning in patients?
3. What are the procedures that should be taken to get safe food?
4. Discuss some criteria to make food safe.

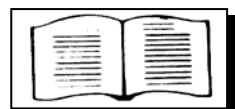
## Lesson 2: Hazards of Unsafe Food

### 2.1. Learning Objectives



At the end of this lesson you will be able to-

- ◆ describe hazards of various food substances,
- ◆ list the microorganisms responsible for most food related illnesses.



### 2.2. Hazards of Food Substances

The main hazards of unsafe foods are concerned with health. Food poisoning, food allergies or food sensitivities, and food idiosyncrasy (food intolerance to non-allergic food) are the food hazards. Food-borne toxicants can cause a decrease in nutrient availability or utilization, or they may damage the gastrointestinal tract and thereby adversely affect absorption. Food-borne intoxications are usually associated with unusual dietary habits such as consumption of strange foods, foods prepared by abnormal methods, or excessive amounts of certain foods. Most of the nutrient-toxicant interactions are insignificant in terms of creating a health hazard.

Food poisoning, food allergies or food sensitivities, and food idiosyncrasy (food intolerance to non-allergic food) are the food hazards

### 2.3. Microorganisms

Two main types of organisms are of concern to those manufacturing or providing food: spoilage organisms and pathogenic organisms causing food-borne disease. Spoilage organisms are mainly yeast, moulds (fungi) and bacteria. The presence of these organisms in food is why we need food preservation techniques.

### 2.4. Natural Toxins in Food

There are many biologically active substances in foods, many of which have not yet been identified. Although certain foods react adversely with some people, leading to headaches, nausea, indigestion or other symptoms, these are often individual responses, such as allergies, not shown by the population in general. Most foods we eat do not cause a toxic reaction because over the centuries humankind has learnt to avoid eating toxic substances by-

- ◆ selection of food crop varieties
- ◆ eating a mixed diet
- ◆ processing, especially heating.

## 2.5. Food Poisoning

Food poisoning is a worldwide phenomenon. In industrialized countries bacteria is the main cause of food poisoning. Many foods are an excellent culture medium in which organisms thrive.

## 2.6. Microorganisms Require

- ◆ certain nutrients
- ◆ moisture
- ◆ a neutral or slightly acidic pH environment.
- ◆ foods naturally supply all these elements, and the microorganisms will thrive in them, warmth shortening the time to multiply.

Many organisms are naturally present in foods, while others are added unintentionally during food preparation and handling. While illness from microbial contamination is rarely fatal. Food contamination is of concern for many reasons. It can result in death, especially in immuno-suppressed patients who cannot form antibodies to the antigens present. There is no excuse for serving unsafe food to people. The four most common microorganisms are-

- ◆ *Staphylococcus aureus*
- ◆ *Clostridium perfringens*
- ◆ *Salmonella* species and
- ◆ *Clostridium botulinum*.

These four microorganisms account for 94% of all food related illnesses. They produce toxins in the food, which are hazardous when eaten.

Food processing provides the means of reducing microbiological and toxicological hazards. The use of fire, discovered later in human evolution, allowed for the introduction of a whole new range of foods into the diet, as the action of heat destroyed many toxic substances. Although there is a long list of substances known to be toxic in foods, many are only mildly so. Indeed, only a few of them pose a hazard to health.

Food processing provides the means of reducing microbiological and toxicological hazard

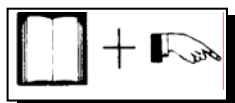


## 2.7. Exercise

1. What are the hazards of unsafe food?
2. What are the organisms most often responsible for food poisoning?
3. What are the conditions required for microorganisms to thrive?

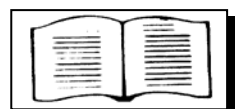
## Lesson 3: Maintenance of Food Hygiene

### 3.1. Learning Objectives



At the end of this lesson you will be able to-

- ♦ describe how food hygiene can be maintained, and
- ♦ list and describe the procedures for safe food handling.



### 3.2. Food Hygiene

'Food Hygiene' means all measures necessary for ensuring the safety, wholesomeness and soundness of food at all stages from its growth, production and manufacture until its final consumption. Knowledge of variety of toxicants that may occur in foods due to lack of sanitation and hygiene, poor transportation, storage, processing, distribution and cooking is therefore necessary for every consumer.

Handling, storing and preparing foods properly will prevent them from spoiling and losing nourishment

Handling, storing and preparing foods properly will prevent them from spoiling and losing nourishment. Food handler's clothing and hands should always be clean. Do not handle food if you have an infected cut on the finger or if you have boils. Foods should also be covered both inside and outside of the refrigerator. This prevents them from being infected or infested by insects, drying out, absorbing odors, or having anything spilled on them. Most of all, covered foods keep their taste and nourishment. All surfaces, containers, knives and other equipments that are used in the preparation or storage of food must be kept very clean. Surfaces should be free from cracks or grooves that are difficult to clean or may trap particles of food, which attract pests and decay causing the growth of organisms and spread of disease.

Domestic animals should be kept well away from areas used to prepare or store food for the family to eat. Animal feeds should not come into contact with human food. Special care is needed once food has been cooked since warm food can spoil easily. Cooked food should not come into contact with uncooked or foods to be eaten raw. In general food should be kept very hot or cold.

### 3.3. Safe Food Handling Procedures

The biggest controllable hazard in foods involves microorganisms that naturally thrive in foods. In health care agencies safe/proper food handling procedures are of great importance. Consumers and food service enterprises not following rules for safe food handling cause most food borne illnesses.

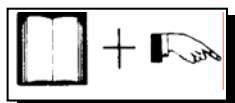


### **3.4. Exercise**

1. What is food hygiene?
2. Give examples of violations of food hygiene you have seen in your home or in your hospital.
3. What are the safe food handling procedures?
4. How are nursing personnel responsible for preventing food poisoning in-patients?

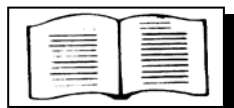
## Lesson 4: Preservation of Food

### 4.1. Learning Objectives



At the end of this lesson you will be able to-

- ◆ list the reasons for food processing,
- ◆ describe and give examples of food preservation techniques,
- ◆ describe necessity of food preservation, and
- ◆ discuss about various methods of food preservation.



### 4.2. Food Spoiling

Food spoilage is brought about by the action of enzymes present in foods due to the action of microorganisms or due to infestation with insects and worms. Creating all environments unfavorable to the action of enzymes or to the growth of microorganism is the main objective of food preservation. Natural and artificial methods are used to preserve foods. Chemical preservatives are also added to foods to preserve them.

As the principal spoilage agents are normally present in foods, destroying them or preventing their development is the chief problem of food preservation. Any condition opposed to the development of these organisms, whether by retarding their growth or by entirely destroying them, aids in the preservation of food.

Food spoilage is brought about by the action of enzymes present in foods due to the action of microorganisms or due to infestation with insects and worms

### 4.3. Ways of Preserving Food

**4.3.1. Drying:** Traditionally this was sun drying or steaming. Removal of moisture is of benefit in preserving food because dehydration of foods prevents growth of the microorganisms, since they cannot grow without water. Bacteria, which require water, cannot grow and autolytic enzymes are inhibited. Freeze drying is a process of removing water while the food is frozen. Drying may retard enzyme action also. Meat, fish, eggs, vegetables, and green leaves can all be dried to remove the water.

**4.3.2. Heating:** The process of heating commonly preserves food. Cooking kills most microorganisms depending on the length of time and temperatures used. Heating is used in several ways. Germs are usually killed at above 70<sup>0</sup> C or more heat. Blanching (1-8 min at 100<sup>0</sup> C depending on the food) before freezing and canning inactivates some enzymes. Pasteurization of milk (72<sup>0</sup> C for 15 seconds) destroys almost all pathogenic organisms but spores. Cooking destroys all or nearly all organisms (except spores).

Water in the food is not in an available form for multiplication of bacteria

**4.3.3. Refrigeration:** It does not destroy microorganisms but those present cannot multiply or do so only slowly; it also slows autolysis by enzymes in the food. Meat, fish, vegetables, fruit, butter, and chocolate can all be kept in this way.

**4.3.4. Freezing:** Like cold storage, freezing does not destroy the microorganisms and enzymes present in the foods. Freezing prevents bacterial growth because bacterial enzyme activity slows down and then stops as temperature is lowered. In addition, water in the food is not in an available form for multiplication of bacteria. It inhibits the growth of microorganisms, thus freezing methods are not bactericidal but rather bacteriostatic. Freezing now preserves practically all-common fruits. Freezing may preserve most of the vegetables that are saved after cooking.

**4.3.5. Adding Salt or Sugar:** Adding salt or sugars are other ways of lowering the 'water activity' and thus preventing bacterial growth. They also cause exosmosis from the bacteria cells.

**4.3.6. Fermentation:** This is a method of utilizing microorganisms to preserve foods from pathogenic organisms. Microorganisms produce acid or ethanol, or both which inhibits pathogenic and spoilage organisms. This is the oldest form of preservation and is used in making cheese, bread and wine. The end products of bacterial growth are inhibitory to the growth of pathogenic organisms.

**4.3.7. Chemical Preservation:** Certain chemicals are helpful in preserving foods either by retarding or preventing the growth of microorganisms. Benzoic acid, propionic acid, and ascorbic acid are naturally present in certain foods. These are added to certain specified foods in controlled amounts to prevent bacterial growth.

**4.3.8. Ionizing Radiation:** Food irradiation is another food preservation technique to prevent food spoilage. Short-wave length gamma rays are used on foods to kill insects, bacteria, yeast and moulds that often contaminate foods and cause illnesses. The organisms are killed by very low dosages, so the food itself does not become radioactive.



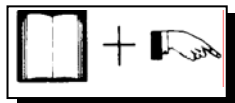
#### 4.4. Exercise

1. Why do we preserve food? Discuss the basic idea behind food preservation.
2. What are the methods of food preservation? Describe them and give some examples from your own experience.

## Unit 3: Diet and Disease

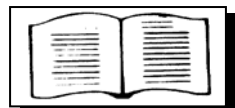
### Lesson 1: Dietary Management for a Hospitalized Patient

#### 1.1. Learning Objectives



At the end of this lesson you will be able to-

- ◆ describe the basic concepts of diet therapy,
- ◆ discuss how a patient's nutrition is maintained, and
- ◆ compare and contrast the nutritional impact of oral, enteral and parenteral feedings.



#### 1.2. Dietetics

In the treatment and prevention of human diseases, basic nutritional and dietary principles, often referred to as *dietetics*, is an important contributor. Dietetics is concerned with the science and art of human nutrition and is an essential component of the health sciences. Dietetics is the knowledge concerning foods, which will provide nutrients throughout the life cycle in health and disease.

Diet therapy for a particular disorder may be described in terms of the disorder, as in diabetic diet, kidney diet and diet in hypertension. In terms of nutrient contents, diet therapy may be described as in low-calorie diet, low-protein diet, or high-protein diet.

There are six categories of hospital feedings-

1. Regular diet
2. Diets with texture and blandness modifications
3. Diets with nutritional modifications
4. Diets with miscellaneous modification
5. Artificial feeding methods and
6. Special test diets for diagnostic purposes.

Each of these categories is presented in Table.

Dietetics is concerned with the science and art of human nutrition and is an essential component of the health sciences

Table: Examples of different types of hospital diets.



Category of Diets	Examples of Diets
1. Regular diets	Regular foods with simple adjustments
2. Diets which texture and blandness modifications	Fluid-regulated diet, Liquid diet, Soft diet, Fibre-regulated diet
3. Diets with nutritional modifications	Calorie-controlled diet Protein-controlled diet Fat-controlled diet Carbohydrate-controlled diet Mineral-controlled diet (electrolyte-controlled diet)
4. Diet with miscellaneous modifications	Tyramine-controlled diet Uric-acid-controlled diet Purine-controlled diet
5. Artificial feeding methods	Parenteral feedings Enteral feeding
6. Special test diet for clinical diagnosis, confirmation, and assessment of disorder	The diet may be a test for: Fat excretion Metabolic studies X-ray studies Stool, blood studies Glucose tolerance Ketogenic hypoglycaemia Pheochromocytoma Carcinoid tumors Collagen degradation Urinary creatinine excretion

### 1.3. Basic Concepts of Diet Therapy

Diet and nutrition may be related to disease in two ways-

- a. **Therapeutic** special dietary and nutritional care may be required for people with certain forms of illnesses. Therapeutic nutrition can affect

the course of an illness. For example, diet therapy can reduce or control the symptoms of diabetes.

- b. Preventive** by using the knowledge that certain dietary practices or substances may produce or worsen specific clinical disorders. Diet can prevent some diseases. For example, eating too much salt may cause high blood pressure. On the other hand, avoiding excess intake of salt may help to prevent high blood pressure. Life long dietary habits can influence disease prevention.

#### **1.4. The Role of Nurses**

Nurses can play an extremely important role in clinical dietetics. They coordinate the activities of doctors, dietitians, and patients, including diet prescription, food service, meal serving, and patient response.

Arranging food trays, helping patients eat, and answering questions are among the nurse's duties. In addition, nurses observe patients directly and record the amounts of fluids, foods, and nutrient supplements consumed. Measuring the amount of urine voided and evaluating a patient's response to the dietary regimen are related duties of the nurse.

Enteral and parenteral feeding practices are administered and monitored by nurses. In the case of intravenous fluids and electrolytes, only nurses who also check the patient's response, carry out the doctor's prescription. The dietitian or nutritionist is helped in planning other aspects of the patient's nutritional and dietary needs by the nurse's observations and the patient's health history.

The nurses frequently ask the patient's only source of nutritional and dietary information and advice. In any case, the nurse has the best opportunity to teach the patients principles of nutrition in the course of the daily care. After the patient is discharged, the nurse may be the only health professional in contact with the patient. Therefore, the nurse plays an important part in the nutritional and dietary care of the patient.

#### **1.5. Nutritional Maintenance**

Hospital malnutrition is a continuing problem. The reasons for inadequate nutritional care include-

- a. the patient's poor nutritional status
- b. adverse effects from drug treatment
- c. pain
- d. nausea

- e. vomiting
- f. inadequate care resulting from poor communication between patient and care givers
- g. lack of nutritional knowledge
- h. patient's inability to follow the dietary prescriptions.

## **1.6. Knowing the Patient**

One of the most important ways for a hospital and health team to prevent malnourishment is to know the patient and monitor his or her progress, especially regarding nutrition. The following factors are of particular importance:

### ***1.6.1. Personal History***

The health history and interviews of patients, family members, and health personnel may reveal relevant details such as health and special feeding problems.

### ***1.6.2. Life long Eating Habits and Nutritional Status***

Information should include the number of meals eaten daily, time and location of each meal, sizes and servings, types and qualities of foods, foods habits and eating difficulties.

### ***1.6.3. Body Weight History***

Specially important in disorders such as diabetes and renal diseases, are the degree of overweight or underweight, body weight history since childhood, family weight history, weight at hospital admission, and ideal body weight.

### ***1.6.4. Drug Use History***

A thorough knowledge of the patient's drug use history is very important because of the relationship between drugs and nutritional status.

### ***1.6.5. Ideal Body Weight and Caloric Intake***

Standard tables and sex/frame/height rules of thumb help to establish a patient's ideal body weight. Recommended Dietary Allowances (RDA) and other methods may be used to determine calorie intake.

### ***1.6.6.. Eating Pattern During the Hospital Stay***

For patients with fever, infections, and conditions of stress, overall monitoring is even more important. If protein and calorie consumption fall below certain levels, drastic measures such as enteral feeding (via the gastrointestinal tract) or parenteral feeding (via the veins) may be indicated.

### ***1.6.7. Medical History***

The patient's records should include nutritional status, results of blood and urine analysis, medications administered, and a complete description of hospital feeding, such as diet ordered, nutrient intake, and use of enteral and parenteral feeding.

## **1.7. Communication with other Medical Personnel**

The best patient care results from close communication among the doctor, nurse and dietitian. Coordination with other professionals - pharmacists, oral surgeons, and physical therapists, for example - may also be required in certain disorders such as cancer, burns, and chronic illnesses.

## **1.8. Helping the Patient Comply**

A lack of nutritional support programs is not the only reason for malnutrition among hospital patients. Another problem is a patient's unwillingness or inability to eat the hospital diet.

All sick people experience physical and psychological trauma to some extent. Hospitalization can increase anxiety and confusion. Other major considerations in patient compliance include-

- ◆ personal preferences
- ◆ condition on admission
- ◆ diet prescription
- ◆ patient's level of knowledge, and
- ◆ adjustments for specific problems.

Basic eating pattern are largely determined by socioeconomic, ethnic, cultural, family, personal liking and disliking and religious factors. These eating patterns and the patient's condition on admission provide important clues to appropriate dietary care.

### **1.9. Regular Hospital Diet**

The regular hospital diet contains all the essential nutrients, such as calories, proteins, fats, carbohydrates, minerals, and vitamins, in adequate amounts to satisfy the Recommended Dietary Allowances. Such a diet is based on the basic four food groups.

In planning any regular or therapeutic diet, the objective is nutritional adequacy. If the diet is modified to treat a patient with a disease, the nutrient contents must still comply with the RDAs.

A regular diet sometimes requires only slight adjustment for a hospitalized patient. For example, a patient recovering from minor surgery needs foods high in protein and calories in addition to the regular diet. Such foods as cheese, meat, bread, fat, milk help to rebuild body muscle.

### **1.10. Enteral and Parenteral Feedings**

Though oral ingestion and digestion is the best way to assure the proper nutrient intake of a patient, a number of clinical conditions make the normal route of nourishment unsatisfactory or unadvisable. The two basic artificial methods of feeding in a hospitalized patient are-

- a) enteral and
  - b) parenteral nutrition.
- a. Enteral feedings are administered directly into the gastrointestinal tract. Enteral feedings may combine oral feeding of regular foods with nutritional supplements.
  - b. Parenteral feedings enter the body by injection directly into blood veins. Parenteral feeding may include standard intravenous (IV) therapy and partial or total parenteral nutrition.

In circumstances where oral feeding is difficult, enteral feeding is indicated. Examples of enteral feedings are in such conditions as intestinal diseases, severe burns, and head and neck tumors.

In some cases, a patient needs to be nourished directly through the blood stream, bypassing the gastrointestinal system. The nutritional adequacy of parenteral feeding varies from the very temporary standard intravenous therapy (IV) to total parenteral nutrition (TPN), which can be nutritionally complete. Standard IV therapy- a supportive system of fluids and electrolytes is used in standard intravenous therapy usually-sodium (saline), ammonium chloride, and dextrose (5% to 20%) solutions. Used for emergency situations such as the period following difficult childbirth or surgery, this method provides a minimal amount of nutrients. The

patient is kept on this treatment only for one to two days to avoid semi-starvation.

***Total parenteral nutrition*** (TPN)- provides an adequate amount of calories, proteins, fats, carbohydrates, minerals and vitamins. These nutrients must be administered via the central venous system. TPN is used in various clinical conditions such as kidney failure and cancer.

The use of TPN is increasing because of its many advantages.

First, body organs are directly provided with concentrated calories, amino acids, and essential fatty acids, vitamins and minerals, which are completely absorbed without waste.

Second, the gastrointestinal tract is permitted to rest and the body has a chance to replenish itself.

Third, speedy repair of organs and tissues occurs because of the direct availability of nutrients.

TPN can lead to weight gain, a positive nitrogen balance, wound healing, and synthesis of hormones and enzymes - in short, it hastens recovery.



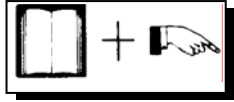
### **1.11. Exercise**

#### **A. Short and Broad Questions**

1. What are the different types of hospital diets? Discuss with example.
2. Discuss the two basic relationships between nutrition and disease.

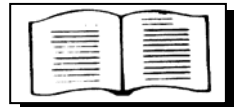
## Lesson 2: Dietary Management of Disease-I, Diet in Diabetes Mellitus

### 2.1. Learning Objectives



At the end of this lesson you will be able to-

- ◆ discuss the role of diet in the treatment of diabetes,
- ◆ explain to patients the basic dietary principles of managing diabetes, and
- ◆ discuss the clinical symptom of diabetes.



### 2.2. Definition

Diabetes mellitus is a chronic state of hyperglycaemia, resulting from absolute or relative lack of insulin and is caused by heredity, environmental factors or both often acting together. Hyperglycaemia is a condition where blood glucose remains higher than normal. Glucose is a type of sugar, which is obtained from digested food. It increases in blood and urine because it is not processed correctly by the body due to the reduction in or absence of insulin.

Diabetes mellitus is a chronic state of hyperglycaemia, resulting from absolute or relative lack of insulin

### 2.3. How does this Happen?

Some symptoms of diabetes:

A person with diabetes may-

1. Urinate often. This happens because more urine is produced as water is drawn from the cells to help excrete excess sugar in the blood.
2. Become very thirsty and drink a lot. The loss of excess water through the urine makes one very thirsty.
3. Eat often-as the food is not utilized so diabetics are always hungry.
4. Complain of a pricking, tingling or creeping sensation on the skin and may itch a lot.
5. Complain of blurred vision. Some people say their eyes are cloudy or dark.
6. Cuts, boils and burns are not healed quickly.
7. Become weak and tire easily, as the various parts of the body do not get enough energy and nourishment.
8. Lose weight in spite of normal or increased appetite. The body tries to get nourishment by using up its muscle and fat. This usually happens in Type I diabetes.

A person who has any of those symptoms, especially someone who has diabetes in his family and is overweight should be checked regularly for diabetes. If diabetes is found early and controlled, the person can live a long, happy, healthy and normal life. The objectives of dietary management in diabetes include the achievement of-

1. Optimum nutrition,
2. Desirable body weight,
3. Keeping blood sugar levels normal or near normal,
4. Keeping blood fat low to prevent heart disease. Heart disease is nearly three times more common in diabetics than in non-diabetics, and
5. Keeping low levels of sugar and ketones in the urine.

In addition, the diet should aim to minimize chronic degenerative complications.

Most diabetics will require a regulated food intake throughout life. Dietary instruction given to a diabetic must be simple.

### **2.4. Diet is an Important Part of Diabetes Management**

Each person with diabetes needs to be provided with an individualized plan and appropriate counseling for using the plan. Follow up counseling is usually essential.

Diabetes is a chronic life long disease. The diabetic has essentially the same nutritional needs as a non-diabetic of similar age, weight and with the same activity level. Thus, the food intake of a diabetic should follow the pattern for a normal diet. In general, most persons with diabetes can have a normal diet based on the six food groups. All foodstuffs can be classified into exchange groups for the benefit of diabetic patients. With careful selection from this exchange group a diabetic can consume any item within the limits. A typical diet prescription provides 10 to 30 percent of the energy at breakfast, 25 to 35 percent in lunch and dinner, and sometimes zero to 25 percent for between meal and snacks.

#### **2.4.1. Complex Carbohydrate Foods Should form the Bulk of the Diet**

It is the carbohydrate that provides calorie easily. So, it is recommended that 50-60% of the calories should come from complex carbohydrates. Foods such as unrefined staples, peas, beans, vegetables and fresh fruits are good sources of complex carbohydrates. They are better for the person with diabetes than highly refined foods such as flour, crackers, most dried and ready to eat cereals, sugar, honey and other sweets. Complex carbohydrates are better because they are digested more slowly. As such,

the sugar from them is absorbed more slowly over a prolonged period of time.

Complex carbohydrate foods also have lots of fibre. Fibre helps the body to absorb glucose slower so that the blood sugar levels do not shoot up very rapidly. Fibre also helps a person to have regular bowel movements and lowers the fat like substance, cholesterol in the blood.

#### **2.4.2. The Amount and the Type of Protein Rich Foods**

The protein allowance for the adult diabetic is the same as for the normal person one gram for each kilogram of body weight (1g/kg body wt). Protein should provide about 15-20% of the calories. Protein rich foods, such as fish, chicken (without skin) lean meat, low fat cheese, skimmed milk and dried peas and beans, which are low in fat, are the best.

#### **2.4.3. The Amount and Type of Fat**

After establishing the proteins and carbohydrates of the diet, fat is used to supply the remainder of the calories. This will vary from 25-30% of the calories that should be coming from fat. Diets low in cholesterol and saturated fats and relatively high in polyunsaturated fats have been proven to have a cholesterol lowering effect. Thus for diabetics, foods high in cholesterol and saturated fats should be restricted or, in certain circumstances be avoided.

#### **2.5. Meals for Type II Diabetes (Diabetes not Dependent on Insulin)**

Persons with type II diabetes (whose weight is normal) should eat food to provide enough calories to maintain their weight. This will help to ensure that their blood sugar levels are neither too high nor too low.

A person who is obese will need fewer calories until the ideal weight is achieved. A low calorie, high fibre diet and exercise will help the person to lose weight.

A simple guide to menus for Type II diabetes-

Total daily division of food into exchange-

This will provide 1200 kcal (carbohydrate 125 gm, protein 70 gm, fat 45 gm) and this should be equally divided among three meals.

Most foods cooked for the family is also good for the diabetic. Special diabetic foods are not necessary. Foods for persons with diabetes should

be measured. A measuring cup and a teaspoon are helpful. Most foods are measured after being cooked.

## 2.6. Meals for Type I Diabetes (Diabetes Dependent on Insulin)

In planning meals for Type I (insulin dependent) diabetes, care must be taken to include the kinds, amounts of foods to get the right ratio of carbohydrates / fats / proteins. Food is usually divided into three meals and a bedtime snack. Sometimes there are mid-morning and mid-afternoon snacks. The meals are spaced so that the blood sugar level remains stable throughout the day. It is important for persons with type I diabetes to eat regularly to prevent the blood sugar from getting too low or too high. The morning, noon and evening meals should contain the bulk of the calories.

Table showing menus for the diabetics:

### a. Number of Servings Per Day



Exchange	Morning	Snack	Lunch	Evening	Supper	Bedtime
Carbohydrate	3	2	6	2	6	1
Protein	1	0.5	2	0	2	0
Fat						

### b. Daily Diet Chart

#### i. Morning

- |                               |                           |               |
|-------------------------------|---------------------------|---------------|
| 1. Bread or Ruti 2 pieces     | = 2 carbohydrate exchange | = 150 calorie |
| 2. Vegetable                  | = one exchange            | = 75 calorie  |
| 3. Meat/fish/egg              | = two exchange            | = 80 calorie  |
| 4. Tea/coffee (without sugar) | = one cup                 | = 0 calorie   |

---

**Total** = 305 calorie

#### ii. Snacks

- |                               |                           |               |
|-------------------------------|---------------------------|---------------|
| 1. Biscuit or Ruti 2 pieces   | = 2 carbohydrate exchange | = 150 calorie |
| 2. Meat/fish one piece of 15g | = 3.5g protein            | = 20 calorie  |

---

**Total** = 170 calorie

**iii. Lunch**

1. Rice 4.5 cup or Ruti 6 pieces (30g each)	= 4 carbohydrate exchange	= 300 calorie
2. Vegetable	= one exchange	= 60 calorie
3. Meat/fish	= two exchange	= 100 calorie
4. Dal half cup	= one exchange	= 75 calorie
<b>Total</b>		= 535 calorie

**iv. Snacks**

1. Biscuit 30g/muri/chira	= 2 exchange	= 150 calorie
2. Black tea/coffee (without Sugar)	= one cup	= 0 calorie
<b>Total</b>		= 170 calorie

**v. Supper**

1. Ruti/bread (30g each)	= two carbohydrate exchange	= 150 calorie
2. Meat/fish	= three exchange	= 165 calorie
3. Vegetable	= two exchange	= 120 calorie
4. Dal	= one exchange	= 75 calorie
5. Milk (skimmed)	= one exchange	= 80 calorie
<b>Total</b>		= 590 calorie

**vi. Bedtime**

1. Ruti 1 piece/biscuit 15g	= one carbohydrate exchange	= 75 calorie
2. Fruit (1 small guava/ orange/apple)	= two exchange	= 80 calorie
3. Oil 15g for cooking		= 135 calorie
<b>Total</b>		= 310 calorie
<b>Grand Total</b>		= 2040 calorie



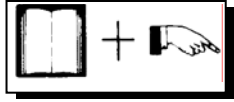
## **2.7. Exercise**

### **A. Short and Broad Questions**

1. Describe the clinical symptoms of diabetes.
2. What dietary information is needed before planning a diabetic diet?
3. What is the dietary treatment of type II (insulin independent) diabetes?
4. What percentage of carbohydrates, proteins and fats are needed for diabetics?
5. What form of carbohydrate is useful for them and why?
6. What is the advantage of fibre in diabetic diet?

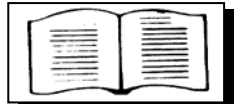
## Lesson 3: Dietary Management of Disease-II, Diet in Diarrhoea

### 3.1. Learning Objectives



At the end of this lesson you will be able to-

- ◆ define diarrhoea,
- ◆ describe and give examples of the dangers of diarrhoea, and
- ◆ define and describe rehydration.



### 3.2. Definition

It is a condition in which loose stools are passed more frequently, effortlessly and are mixed with mucous or blood or both. People vary in the type of stools they pass, and how often they pass them, but as a general guide, three or more loose or watery stools in a day can be considered as diarrhoea. Frequent passing of normal stools is not diarrhoea. Breastfed babies often have stools that are very soft, but that is not diarrhoea.

Three or more loose or watery stools in a day can be considered as diarrhoea

Diarrhoea is most common between six months and three years of age. It is also common in babies who are drinking cow's milk or infant feeding formulae. Diarrhoea occurs in adults as a symptom of many diseases and may occur during epidemic. Diarrhoea is an illness that requires immediate care and should never be neglected.

### 3.3. Why Diarrhoea is Dangerous?

The two main dangers of diarrhoea are a) malnutrition and b) death; because the food is not properly absorbed, the child becomes rapidly dehydrated and malnourished. When the child loses large amounts of water and salts from the body, in the frequent watery stools, it can result in death. The primary cause of this death is dehydration. Small children with severe diarrhoea lose water and salts rapidly and can die quickly, sometimes within a few hours. In many cases, children with diarrhoea recover by themselves, but they become weak.

### 3.4. What Causes Diarrhoea?

Diarrhoea is caused by infection of the bowel by germs or organisms that cannot be seen by the naked eye. They enter through the mouth into the stomach. Germs grow in an unclean environment and enter our body because of our unhygienic practices. Some of these are-

1. Drinking dirty water.

2. Drinking dirty milk.
3. Touching food with dirty hands.
4. Taking dirty food.
5. Using dirty feeding bottles.
6. Using dirty cooking and eating utensils.
7. Allowing flies, dust and dirt to get on to food; and
8. Eating dirt and playing in dirty places.

Diarrhoea also can be caused by malnutrition. When a child is malnourished he cannot digest his food normally. Malnutrition also weakens the walls of the stomach so that it cannot absorb food well. When the food is not digested and absorbed properly the child gets diarrhoea.

### 3.5. What Causes Dehydration?

When there is diarrhoea, the intestines don't work normally and the water and salts pass very slowly or not at all through the mucosal wall. As a result, the body does not take up as much salt and water that needs to be replaced and more than the normal amounts are passed in the stools. Thus, the body is drained of water, salts, and nutrients; this is called dehydration. Diarrhoea may sometimes be accompanied by vomiting. Vomiting increases the rate of dehydration. Dehydration occurs faster in hot climates and when there is fever.



- ◆ Dehydration is dangerous in diarrhoea.
- ◆ Dehydration is caused by loss of water and salts from the body.
- ◆ Save a child with diarrhoea by rehydration.

### 3.6. What is Rehydration?

The easiest way to save the life of a child with diarrhoea and dehydration is to replace the lost water and salts

The easiest way to save the life of a child with diarrhoea and rehydration is to replace the lost water and salts. This can be achieved by adding clean water to a specially prepared mixture of salts available as a powder in sealed packets. Salt and the glucose are the two main ingredients of this mixture. This salt mixture is known as *Oral Rehydration Salts (ORS)*. After mixing the contents of one standard packet of oral rehydration salts in one litre of boiled drinking water, it is commonly known as *oral rehydration solution*.

### 3.7. Composition of ORS

As a general rule, 40g of ordinary sugar and 4-5g of common salt should be mixed in 1 litre of clean drinking water. It is extremely important to mix the sugar, salt and water in the correct proportions. A commercially prepared packet available in the market will contain-



Ingredient	Amount
Sodium Chloride	3.5 grams
Sodium Bicarbonate	2.5 grams
Potassium Chloride	1.5 grams
Glucose	20 grams

This needs to be added to 1 litre of potable water.

### 3.8. How to give the Solution to the Child?

The prepared solution should be kept in a cool place and kept covered to protect it from flies and dust. Use the fluid on the day it is prepared. Throw away any fluid that was prepared the day before.

Small amounts of fluid should be given to the child every few minutes. The best way is to give 2-3 small spoonfuls from a cup, wait 2-3 minutes, then give some more. In this way, the child is less likely to vomit. If the child does vomit, wait 5-10 minutes, then give some more. Vomiting is not a reason to stop giving the solution, unless it is severe and frequent.

### 3.9. Dietetic Management

Never stop breast-feeding during diarrhoea

A child less than six months old should continue to get milk feeds. Breast milk is the best. A child above six months of age should get foods that are very nourishing but not bulky. These foods include breast milk, mashed fruit, juices and porridge. A child over six months of age should continue to be breastfed. In addition, the child should get mashed fruit, fruit juices, porridge and mixes of regular family food such as rice, bread, potato, fish, eggs, meat, peas, and soft vegetables. Oil, butter, margarine and gravy should be added to the foods to provide more energy. Never stop breast-feeding during diarrhoea.

In some clinical conditions of diarrhoea, a very low residue diet is recommended. Residue is the bulk remaining in the intestine after food is assimilated. Milk is a high residue food. In acute diarrhoea, not responding

Breast-feeding is the best way to prevent diarrhoea in infants

to the above suggestions, the alimentary canal must get complete rest. If excessive vomiting is present no food is allowed. Saline with 5% glucose can be given. Electrolytes like sodium and potassium with high fluids are recommended. Apples, tender coconut water (*dab*), fruit juices, rice gruel and thin porridge without milk is prescribed. Arrowroot and sago are excellent for diarrhoea. Strained fruit juices and soups are allowed. Jaggery and honey are also good. Leafy vegetables and green vegetables should be avoided. Over ripe or fibrous vegetables are excluded.

Biscuits, soft desserts without milk and soft cooked eggs are permitted. Fried items, fat, pulses, beans, vegetable salads, seedy fruits, sweets, dried fruits, nuts, condiments and spices are best avoided. Only double cooked mashed vegetables are allowed. Once normal food is tolerated, poached eggs, cereal, porridge, fruit juice, baked non-vegetarian items, mashed potatoes or soups, biscuits and arrowroot drinks can be given in the menu. Since the food intake is low at first minerals like iron, calcium and all vitamins have to be supplemented. A fluid diet is modified into a soft bland diet as the condition of the bowel improves.

Feeding a child who is ill requires extra patience, time and care. After recovery from diarrhoea, extra food should be given. Try to give a little more than the child normally eats. Small feedings in between the main meals is also a good approach.



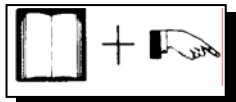
### 3.10. Exercise

#### A. Short and Broad Questions

1. What are the causes of diarrhoea?
2. What are the consequences of diarrhoea?
3. How can dehydration be corrected?

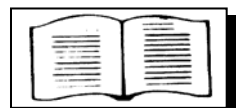
## Lesson 4: Dietary Management of Disease-III, Diet in Cardiovascular Disease

### 4.1. Learning Objectives



At the end of this lesson you will be able to-

- ◆ describe the dietary management of hypertension,
- ◆ identify methods of reducing cholesterol in the body, and
- ◆ list the guidelines for managing hypertension without drugs.



### 4.2. Diseases of the Heart

Diseases of the heart and the vascular system account for much of the illness in the adult population. Hypertension is one of the high risk factors for chronic heart disease (CHD). The main objectives in the dietary treatment of cardiac patients are -

1. to provide adequate nourishment and proper nutrition, with maximum rest for the heart, and
2. bring the patient to a good nutritional status by appropriate diet.

Diet therapy should be the first consideration for the hypertensive patient. An initial step in treating hypertension is to advise overweight people to lose weight by reducing their intake of calories and increasing their physical exercise. There have been several reports that people with hypertension tend to have increased sodium concentrations in cells and abnormal activities in blood cell membranes - one of the mechanisms for keeping sodium out of and potassium inside the cell.

Depending on the degree of excessive weight at the time of diagnosis, moderate weight loss influences blood pressure more or less uniformly (about five or six percent of body weight).

However, weight loss without sodium restriction may be discouraging. A lower blood pressure is observed when sodium intake is restricted in sodium sensitive hypertensive patients. On the other hand, heavier people consuming more food, consume more sodium. Hypertension, heart disease or complications of cardiovascular diseases may require a sodium-restricted diet as well as a diuretic. By losing weight, sodium intake is decreased and potassium intake increases.

Some level of sodium restriction is usually appropriate. The condition and the patient's ability to follow a diet determine. Restriction of dietary sodium is indicated for two major pathological processes-

## Diet and Disease

- a) hypertension, and
- b) oedema. About one third of mild hypertension can be controlled with mild salt restrictions. When sodium is restricted, all potential sources of sodium should be considered.

Patients should also be encouraged to increase their intake of fresh fruits and vegetables. These are not only low in calories and high in fibre but also high in potassium. By including more fresh foods and less processed food, fewer high fat, high sodium foods are consumed. Additionally, an adequate amount of dairy products should be included in the diet. If a patient cannot tolerate dairy products, calcium supplements of 1 gram per day may reduce blood pressure.

A low cholesterol diet menu (cholesterol 160mg).

### i. Morning



Ruti	-	two pieces or bread two pieces
Vegetables	-	one cup
Oil	-	one tea-spoonful
Egg	-	one (every alternate day), yolk to be avoided
Tea	-	one cup
Fruit	-	one small orange or one guava or one apple

### ii. Snacks

Biscuit - four pieces

### iii. Lunch

Rice	-	two and half cup
Vegetable	-	half cup
Leafy vegetable	-	half cup
Salad	-	half cup
Meat/ fish	-	60 g
Dal	-	half cup
Oil	-	three tea-spoonful

**iv. Supper**

Bread	-	four pieces or roti two pieces
Vegetable	-	half cup
Salad	-	half cup
Meat/ fish	-	60 g
Oil	-	two tea-spoonful

**v. Bedtime**

Milk	-	One cup with one teaspoonful sugar
------	---	------------------------------------

Diuretic drugs lower blood pressure by increasing urinary sodium excretion and reducing blood volume. Alternatively, a sufficient reduction of dietary sodium can produce negative sodium balance. This requires that there is-

1. No salt added at the table or in cooking,
2. Food is restricted or omitted in which salt has been incorporated during processing; and
3. Emphasis is placed on foods of low sodium content.

The physiological requirement for sodium is no more than 20ml per day, equivalent to about 1 g of common salt (NaCl). Sodium loss through the skin is very small unless there is much sweating. But people on low sodium intakes and those who have adapted to hot climates lose less sodium in sweat, about 30ml per litre.



1. Many individuals show a fall in blood pressure when salt intake is reduced.

2. Many individuals tend to show a small rise in blood pressure when sodium intake is experimentally increased in foods.

**a. Low Sodium (1 mmol or less per usual serving)**

Rice, plain wheat, flour, coffee, tea.

Fresh and dried fruit, fresh and frozen vegetables potatoes, fresh meat and poultry, fresh fish.

**b. Medium Sodium**

Bread, cakes, milk, butter, margarine and low salt cheeses, some mineral water.

***c. High Sodium (10 mmol or more per usual serving)***

Smoked fish, corned beef, sausage, and bacon.

Most breakfast cereals, baking powder, pickles, tomato sauce, tomato juice. Most biscuits, most cheese, canned vegetables, soups, pizzas and potato crisps.

The chief complaint about low sodium diets is that they are very bland and tasteless. People are accustomed to higher amounts of salt on foods.

Nurses role are vital to a successful hypertensive diet programme. Since sodium restriction is so important in any anti-hypertensive therapy, it is widely felt that there are not enough dietitians for the desired consultation and monitoring. An informed nurse can honestly compliment patients on even a modest reduction in sodium intake. This feedback can be most encouraging and a prime motivating factor in a successful programme.

**4.3. Control of Blood Cholesterol**

Today, one of the most effective treatments for the reduction of blood cholesterol is by correct food intake. The recommended diet is a moderate fat intake of 20-30 percent of the total calories, and replacement of saturated fats with polyunsaturated fats. The cholesterol content in the diet should be restricted to about 350mg. The diet will be high in complex carbohydrates and fibre, and relatively low in calories.

In the diet where dietary cholesterol is reduced to 100mg/day to lower total plasma cholesterol and low-density lipoprotein (LDL) cholesterol, dietary fat should be lowered to 20 percent of the total calories. This has a beneficial effect on all forms of hyperlipidaemia (increased concentration of lipid in the blood). Most of the reduction is in saturated fat content to about five percent of total calories. The polyunsaturated fatty acid content is only increased slightly, to six to eight percent of total calories. Larger amounts of complex carbohydrate mean that the diet is high in fibre. Sugars are reduced to 10 percent of total calories. The protein content of the diet is adequate and vegetable proteins should replace animal proteins.

People do not make abrupt dietary changes that can be lasting. As such, the dietary changes should be implemented in phases. In phase I, the foods high in cholesterol and saturated fats need to be reduced. In phase II, the amount of meat consumption is reduced to 6 to 8 ounce/day. In phase III, the cholesterol content of the diet is reduced to 100-mg/ day and the saturated fat is lowered to five to six percent of the total calories.



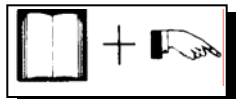
#### **4.4. Exercise**

##### **A. Short and Broad Questions**

1. What are the main objectives of dietary management of patients?
1. Why should sodium intake be restricted in cardiac patients?
2. How could be done for them?
3. What is the role of nurses in this therapy?
4. Discuss how blood cholesterol can be controlled.

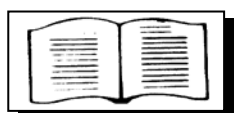
## Lesson 5: Dietary Management of Disease-IV: Diet in Renal Disease

### 5.1. Learning Objectives



At the end of this lesson you will be able to-

- ♦ describe the complications of renal dysfunction,
- ♦ list the reasons for modifying protein, sodium and potassium intake in renal disease, and
- ♦ discuss nutrient supplements that are usually required with renal disorders.



### 5.2. Diet in Renal Disease

One of the important excretory organs of our body is the kidney. Dietetic management aims to minimize protein catabolism, to avoid dehydration and over-hydration, to control electrolyte and fluid loss through vomiting and diarrhoea, to arrest acidosis and to minimize complications.

When the kidneys are no longer able to maintain the normal composition of the blood by excreting all of the waste products, the patient is said to have uraemia

The blood carries the waste materials after catabolism to the kidney where they are filtered and the waste products are excreted in the urine. Normal urine contains about 5 percent solids, consisting of variety of electrolytes, both basic and acid, and the end products of protein metabolism. Among these the largest constituent is urea.

In kidney disease, the filtering mechanism is usually affected. Substances not normally found in the urine, such as albumin, one of the proteins in the blood, may then be present. On the other hand, substances normally cleared from the blood by healthy kidneys may not be fully eliminated. Particularly, urea and potassium are found in increased quantities in the blood. When the kidneys are no longer able to maintain the normal composition of the blood by excreting all of the waste products, the patient is said to have uraemia (retention of urea in the blood) and there is kidney failure. There may be oliguria (diminished secretion of urine) or even anuria (complete suppression of urine).

The diet order for a patient with kidney disease is determined by the state of the kidney function. However, the orders for most patients with include modification of fluid and electrolyte intake, water, and sodium and in renal failure, potassium and reduction of protein in the diet. Calorie intake is also important because without adequate calories, stored body proteins are metabolized for energy, thus, increasing the amount of urea to be excreted by the kidney. In diets for patients with kidney stones, calcium intake may be modified.

### 5.3. Principles of Diet Modification

#### i. Fluids and Electrolytes

Based on output, the total fluid intake may be increased or decreased from 2,000 to 2,500 ml formulates

In planning fluid intake, water from oxidation (approximately 300 cc) must be taken into account including sensible and insensible loss equal to 500 cc per day. The basic allowances (daily loss of water) and the planned intake should balance each other. Total fluid intake may be increased or decreased from 2,000 to 2,500 ml formulates based on output. When the filtration ability of the kidneys is reduced, fluid intake is decreased. When the kidneys are unable to concentrate the urine, resulting excessive loss of water from the body, fluid intake should be increased to compensate for this loss. In acute renal failure or in ureamia, the total fluid intake is reduced to as low as 200 ml or equal to urine output.

#### ii. Sodium

Whether the fluid intake is increased or decreased, the sodium intake from food may be decreased. Patients with excessive water loss also lose sodium and other electrolytes required for maintenance of the normal acid-base balance. When there is decreased glomerular filtration rate, the fluid intake is restricted along with some restriction of sodium intake. In acute renal failure, with a very limited glomerular filtration rate, the intake of both sodium and potassium is restricted. These patients clearly do not need sodium supplements and the basic low sodium of 0.5 g/kg/day will provide approximately 20 meq of sodium daily with no salt added to the cooking or at the table. This low sodium intake may be sufficient to control both the oedema and the hypertension.

#### iii. Protein

When the kidney function is intact, the protein content of the diet should be 1 g/kg body weight for adults. When albumin is lost in the urine, the dietary protein intake should be increased. Usually the adult allowance is increased to 1.5 g to 2-g/kg body weights.

In the conservative management of increasing renal failure, the aim of a low protein diet is to produce a reduction in the level of nitrogenous metabolites (urea) without producing a prolonged negative nitrogen balance. A protein intake of 0.5 g of protein/kg body weight per day or more is required to maintain nitrogen balance. Protein intake of 0.3 g/kg/day will, in most patients, produce a negative nitrogen balance. In uraemic patients, it is best to administer a low protein diet with high biological value. On this regimen, there is no rise in blood urea nitrogen and they achieve nitrogen balance. The initial negative nitrogen balance becomes positive without a rise in blood urea concentration on this diet.

#### **iv. Calories**

All patients with renal disease require an adequate calorie intake. Obese patients with renal disease require moderately calorie-restricted diets. It is important to remember that the necessity of an adequate calorie intake to ensure maximum protein utilization. A calorie intake of 35 to 50 calories/kg/day is recommended and can be provided largely from carbohydrates.

In acute renal failure when all protein is excluded from the diet, more calories from carbohydrate and / or fat are required.

#### **5.4. Role of Nurses**

Careful communication between dietary and nursing services is required to carry out the fluid orders for any patient with renal disease. Other than water, which may or may not be a significant source of sodium and potassium, many fluids offered to hospitalized patients contain significant amounts of sodium and/or potassium.

For example, orange juice and tea contain potassium while tomato juice (canned with salt) contains sodium and potassium. If a diet is severely restricted in electrolytes, a 4 to 8 ounce serving of any one of these beverages could contribute to serious error in therapy.

Severe fluid restrictions present special problems. The nurse needs to give water with medications and the dietitian needs fluids to enhance the palatability of the diet. These patients are usually nauseated and vomited frequently. Hourly communication between nursing personnel and the dietitian is needed to help these patients.



#### **5.5. Exercise**

##### **A. Short and Broad Questions**

1. What is the aim of dietetic treatment in renal disease?
2. Explain why protein, sodium, potassium and calorie intake is modified in renal disease.

## **Supplement**

### **How to Prepare Diet Plan**

## How to Prepare Diet Plan

## How to Prepare Diet Plan

Because calories do count, the first step for preparing a diet plan for a person is to determine the total number of calories he/she burn each day. You do this quite easily by turning to pages 72-83. A glance at these tables shows us that daily caloric output depends five different quantities: sex, age, height, weight, and amount of physical activity. Now, to ascertain daily caloric expenditure, thumb through the table until you locate the table and page that match his/her sex, age, and height. Then on that page run your finger down the left-hand column of figures under Weight until you find the weight, which is listed in pounds, that most nearly corresponds to his/her own. Now on that line move your finger across the page, stopping under the amount of daily physical activity that coincides with his/her, which will be one of four classifications: Light, Average, Moderately Heavy, or Heavy. The number your finger is pointing to is his/her daily caloric expenditure, the figure for which we're searching.

You might have trouble deciding which of the four categories of physical activity applies to him. It depends on how he/she occupy his/her day. If most of time is spent quietly sewing, or reading or watching television-in other words, moving around very little he/she would fall into the Light category.

But if his/her daily routine requires a little more effort, and as working in an office, or driving a car, he/she comes under the Average activity column. Examples of people in this category are the average housewife and homemaker, the average businessman, taxi drivers, and most teachers and students.

However, if he/she is on the go most of the day, or if he/she participate in some form of recreation almost every night, then his/her activity is covered by the Moderately Heavy category. Door-to-door salesmen, hospital nurses, housewives who keep large houses with out the benefit of modern appliances, and those who play a few sets of ten is every evening after work are in this classification.

People who engage in really exhausting physical labor are found in the Heavy physical activity category. Examples include lumber-jacks, coal miners, certain types of farmers, and athletes-such as distance runners-who train long hours each day. But few persons in this class have weight problems. The great amount of physical exercise they perform allows the appetat, the appetite-control mechanism in the brain, to function properly; and, of course, they burn a considerable number of calories.

There are two cautions will be considered during determining his/her calorie expenditure: First, the four categories of physical activity are in no

## How to Prepare Diet Plan

way related to the emotional or mental difficulty of his/her job; they simply describe the amount of physical effort he/she expends during a day. For instance, the President of the United States, who has one of the most demanding jobs in the world, would fall into the Average or, at best, Moderately Heavy category. So choose accordingly. The second caution is this: Don't exaggerate to yourself the amount of physical work he/she performs during the day. For the diet plan to operate successfully, you must select his/her correct daily calorie expenditure number. So, is he/she really employ his/her hours watching television, or sewing and reading, pick the Light category. Or if most of his/her time is spent cleaning house, supervising the kids, and going to market, choose the Average category. A point to remember: If he/she contemplating a weight-reduction program, chance are fall into the Light of Average categories, in any case.

Let's run through a quick example of how to use the calorie-expenditure tables. We'll suppose that she is a housewife, thirty-two years old, 5 feet 4 inches tall, with a weight of 137 pounds. We want to find her caloric output, so we flip through the tables until we come to page 73. This is the table for women between the ages of eighteen and thirty-six who are 5'2" to 5'5" tall. Now we look down the left-hand column, Weight, till we see the figure 135, which is the number closest to her actual body weight. Next, since she is a housewife using modern appliances, we go across the page on that line to the Average category of physical activity. The figure in the column is 2127, her calorie-expenditure number. This means she burns approximately 2127 calories each day.

If she burns 2127 calories a day and eats 2127 calories of food during the same period, maintaining a steady fluid level, her body weight will remain the same. Eat more than 2127 calories and her weight goes up. Eat less, her weight goes down.

But how much less should a person eats to lose weight safely? He/she could eat one calorie less each day and lose at the rate of one pound every ten years, which is obviously unsatisfactory because of the time element. Or he/she could fast, ingesting nothing, losing weight at the swiftest possible pace. But he/she would soon develop nutritional deficiencies and the associated diseases; and he/she would weaken him/her-self thus becoming vulnerable to contagious disease and other medical liabilities. So it's plain that fasting, too, is a poor method of dieting. The ideal calorie difference must lie somewhere between these two extremes.

### **What, then, is the optimum calorie differential?**

To lose weight safely yet at a reasonable speed he/she should take in about 500 calories less each day than he/she burns. Why 500 calories particularly? An energy intake of about 500 calories less than he/she needs

daily will cause he/she to lose about a pound of fat a week. This might seem a slow pace compared to the claims of some of the diet plans foisted on the public; but it's a pound of fat he/she will discarding, not water; and over a year he/she will shed 52 pounds-52 pounds that will stay off permanently. And he/she will be comfortable. Yes, a greater calorie differential will cause he/she to lose weight faster; but studies have shown that he/she run the risk of ketosis, heart trouble, fatigue, and so forth, with a gap that's larger than 500 calories. A higher difference also means she/he will develop a feeling of intense hunger. And hunger is a strong inducement to break a diet. So it's best to keep his/her intake about 500 calories below his/her daily expenditure.

Now he/she has his/her calorie-expenditure number and he/she understands about the 500-calorie deficit for sensible weight reduction. The next step in Diet Plan is to select his/her meals from the breakfast, lunch, and dinner menus that follow the calorie-expenditure tables in this supplement.

Looking through them, he/she can see that Diet Plan is centered on a nucleus of thirty meals: ten breakfasts, ten lunches, and ten dinners, with the unique feature that any combination of any one breakfast, lunch, and dinner will give him at least the RDA for the essential nutrients.

With that in mind, he/she chooses as a single day's meals from the menus any one breakfast, any one lunch, and any one dinner-as long as the total number of calories in the three meals is 500 or more calories less than his/her calorie-expenditure number. And generally this gap will be greater than 500 calories. So he/she has a bonus-he/she can eat any foods he/she desires in addition to the meals chosen from the diet plan to bring the difference to about 500 calories.

For clarity, let's return to the example of our housewife, whose calorie-expenditure number is 2127. She may choose for a day's meals any breakfast to go with any lunch to go with any dinner. Scanning the menus, she decides she will eat Breakfast No. 2 in the morning, Lunch No. 7 at noon, and Dinner No. 4 in the evening. The total number of calories for these three meals is  $425+465+410=1300$  calories. This is 827 calories short of her calorie-expenditure number of 2127 ( $2127-1300=827$ ). Since she has to leave only about a 500-calorie gap, she has 327 calories to play with ( $827-500=327$ ); so she is free to eat 327 calories' worth of food beyond the three meals she has chosen from the diet plan. For instance, as an extra to her meals she might want to include three cups of black coffee, each with a teaspoon of sugar. Because coffee alone contains virtually no food energy. The three teaspoons of sugar, however, contain a total of 40 calories which we must tabulate. With her breakfast she might want to add two strips of bacon-90 calories. At dinner she might like a pat of butter on

## How to Prepare Diet Plan

her baked potato-35 more calories for the butter. As a late-evening snack she may eat ten potato chips-115 calories. The total number of calories for this extra food is  $40+90+35+115=280$ . This is within the 327-calorie limit with which she had to work. If she doesn't eat anything more that day, her net calorie deficit will be close to the 500-calorie difference between energy output and input for which we're shooting, calorie-expenditure number, of course, always being greater than calories consumed-by 500.

Note again that our housewife doesn't have to worry about the nutritional value of the extra food she eats beyond the three-meal core-just the number of calories. The RDA is always met by any combination of breakfast, lunch, and dinner she chooses. She will always get at least 55 mg of protein, 800 mg of calcium, 18 mg of iron, 4000 IU of vitamin A, 1.0 mg of thiamine, 1.5 mg of riboflavin, 13 mg of niacin, and 55 mg of vitamin C. And her consumption of the additional foods will only increase them. She would be wise, of course, to avoid sugar altogether and limit foods high in saturated fats. Fat calories should provide no more than 30 percent of daily food energy intake.

The eating of favorite supplemental foods is not the only flexible aspect of the diet plan. He/she can have the meals in any order she/he likes: lunch in the morning, a dinner at noon, a breakfast at night. Or he/she can interchange any foods among the three meals chosen. As long as he/she eats all of the food in a breakfast-lunch-dinner combination, his/her nutritional health is assured.

Many times he/she can fiddle with the meals themselves, as in the case of our housewife and Lunch No. 7-part of the meal calling for corned beef, lettuce, tomato, and a hamburger roll. She may eat each food separately, or she may make a sandwich of them, perhaps with a little mayonnaise. But she must remember to count the calories of any additions-one teaspoon of mayonnaise equals about 33 calories. This would bring her total calories consumption for that day-including the calories in the sugar in the coffee, the bacon, the pat of butter, and the ten potato chips-to within 14 calories of our 500 calorie off-limits domain, which is all right.

Beside being flexible, Diet Plan has great inherent variety. With ten breakfasts, ten lunches, and ten dinners there are  $10 \times 10 \times 10$ , or a thousand, different ways of arranging a day's meals. He/she could eat a new combination every day for the next two and a half years.

This variety and flexibility will help him to remain on he/her diet until she/he reach his/her weight-loss goal.

**Table-1: Daily Caloric Expenditure-Women**

Age: 18 To 36

Height: 4' 10" To 5' 1"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1415	1576	1732	1887
100	1059	1688	1861	2033
105	1555	1743	1924	2105
110	1600	1797	1987	2177
115	1645	1851	2049	2248
120	1689	1904	2111	2318
125	1733	1956	2172	2388
130	1776	2008	2233	2457
135	1818	2060	2293	2526
140	1861	2111	2353	2595
145	1903	2162	2412	2663
150	1944	2213	2472	2730
160	2026	2312	2589	2865
170	2107	2411	2704	2998
180	2186	2508	2819	3130
190	2264	2604	2932	3260
200	2341	2700	3045	3390
210	2418	2794	3156	3519
220	2493	2887	3267	3647
230	2568	2980	3377	3774
240	2642	3071	3486	3900
250	2715	3162	3594	4025
260	2787	3253	3702	4150

Age: 37 To 56

Height: 4' 10" To 5' 1"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1334	1525	1690	1855
100	1422	1633	1816	2000
105	1464	1686	1879	2071
110	1506	1739	1941	2142
115	1548	1791	2002	2213
120	1589	1842	2063	2283
125	1629	1894	2123	2352
130	1669	1944	2183	2421
135	1709	1994	2242	2490
140	1748	2044	2301	2558
145	1787	2094	2360	2626
150	1826	2143	2418	2693
160	1902	2240	2533	2827
170	1976	2336	2648	2959
180	2050	2431	2761	3091
190	2123	2524	2873	3221
200	2194	2617	2984	3351
210	2265	2709	3094	3480
220	2335	2800	3204	3607
230	2405	2891	3313	3735
240	2473	2981	3421	3861
250	2541	3070	3528	3987
260	2608	3158	3635	4112

## How to Prepare Diet Plan

Age: 57 To 76

Height: 4' 10" To 5' 1"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1249	1470	1646	1821
100	1330	1575	1770	1965
105	1369	1627	1831	2036
110	1407	1677	1892	2106
115	1446	1728	1952	2176
120	1483	1778	2012	2245
125	1521	1827	2071	2314
130	1557	1876	2130	2383
135	1594	1925	2188	2451
140	1630	1974	2246	2519
145	1666	2022	2304	2586
150	1701	2069	2361	2654
160	1771	2164	2475	2787
170	1839	2257	2588	2919
180	1907	2349	2700	3050
190	1974	2440	2810	3181
200	2040	2531	2920	3310
210	2105	2620	3029	3438
220	2169	2709	3138	3566
230	2233	2797	3245	3693
240	2296	2885	3352	3820
250	2358	2972	3459	3946
260	2420	3058	3565	4071

Age: 18 To 36

Height: 5' 2" To 5' 5"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1472	1633	1788	1943
100	1568	1747	1920	2092
105	1615	1803	1984	2166
110	1662	1858	2048	2238
115	1707	1913	2112	2310
120	1753	1967	2175	2382
125	1797	2027	2237	2453
130	1842	2074	2299	2523
135	1885	2127	2360	2593
140	1929	2179	2421	2663
145	1972	2231	2481	2732
150	2014	2283	2541	2800
160	2098	2384	2660	2937
170	2180	2485	2778	3072
180	2261	2584	2894	3205
190	2341	2682	3010	3338
200	2420	2778	3124	3469
210	2498	2874	3237	3599
220	2575	2969	3349	3729
230	2651	3063	3460	3857
240	2727	3156	3571	3985
250	2801	3249	3680	4112
260	2875	3341	3790	4238

Age: 37 To 56  
Physical Activity

Height: 5' 2" To 5' 5"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1472	1633	1788	1943
100	1568	1747	1920	2092
105	1615	1803	1984	2166
110	1662	1858	2048	2238
115	1707	1913	2112	2310
120	1753	1967	2175	2382
125	1797	2027	2237	2453
130	1842	2074	2299	2523
135	1885	2127	2360	2593
140	1929	2179	2421	2663
145	1972	2231	2481	2732
150	2014	2283	2541	2800
160	2098	2384	2660	2937
170	2180	2485	2778	3072
180	2261	2584	2894	3205
190	2341	2682	3010	3338
200	2420	2778	3124	3469
210	2498	2874	3237	3599
220	2575	2969	3349	3729
230	2651	3063	3460	3857
240	2727	3156	3571	3985
250	2801	3249	3680	4112
260	2875	3341	3790	4228

Age: 57 To 76  
Physical Activity

Height: 5' 2" To 5' 5"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1306	1527	1702	1877
100	1389	1634	1829	2024
105	1429	1687	1891	2096
110	1469	1739	1953	2167
115	1508	1791	2015	2239
120	1547	1842	2075	2309
125	1585	1892	2136	2379
130	1623	1942	2196	2449
135	1661	1992	2255	2518
140	1698	2041	2314	2587
145	1734	2090	2373	2655
150	1771	2139	2431	2723
160	1843	2235	2547	2859
170	1913	2331	2662	2993
180	1983	2425	2775	3126
190	2051	2518	2888	3258
200	2119	2610	2999	3389
210	2185	2701	3110	3519
220	2251	2791	3220	3648
230	2316	2881	3329	3777
240	2381	2970	3438	3905
250	2445	3058	3545	4032
260	2508	3146	3653	4159

## How to Prepare Diet Plan

Age: 18 To 36  
Physical Activity

Height: 5' 6" To 5' 9"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1528	1689	1845	2000
100	1627	1806	1979	2151
105	1675	1863	2045	2226
110	1723	1920	2110	2300
115	1770	1976	2174	2373
120	1816	2031	2238	2445
125	1862	2086	2302	2518
130	1907	2140	2365	2589
135	1952	2194	2427	2660
140	1997	2247	2489	2731
145	2040	2300	2550	2801
150	2084	2352	2611	2870
160	2170	2456	2732	3008
170	2254	2558	2852	3145
180	2337	2659	2970	3281
190	2419	2759	3087	3415
200	2499	2857	3202	3548
210	2579	2955	3317	3680
220	2657	3051	3431	3811
230	2735	3147	3544	3941
240	2812	3241	3656	4070
250	2888	3335	3767	4199
260	2963	3429	3877	4326

Age: 37 To 56  
Physical Activity

Height: 5' 6" To 5' 9"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1447	1638	1803	1968
100	1540	1751	1934	2118
105	1585	1807	1999	3192
110	1629	1862	2063	2265
115	1673	1916	2127	2338
120	1716	1970	2190	2410
125	1759	2023	2252	2482
130	1801	2076	2314	2553
135	1843	2128	2376	2623
140	1884	2180	2437	2694
145	1925	2232	2497	2763
150	1965	2283	2558	2833
160	2045	2384	2677	2971
170	2124	2483	2795	3107
180	2201	2582	2912	3242
190	2277	2679	3027	3376
200	2352	2775	3142	3509
210	2426	2870	3255	3641
220	2499	2965	3368	3772
230	2572	3058	3480	3902
240	2643	3151	3591	4031
250	2714	3243	3701	4160
260	2784	3334	3811	4288

Age: 57 To 76  
Physical Activity

Height: 5' 6" To 5' 9"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1362	1583	1759	1934
100	1448	1693	1888	2083
105	1489	1747	1952	2156
110	1530	1800	2015	2229
115	1571	1853	2077	2301
120	1611	1905	2139	2373
125	1650	1957	2200	2444
130	1689	2008	2261	2515
135	1728	2059	2322	2585
140	1766	2109	2382	2655
145	1803	2159	2442	2724
150	1841	2209	2501	2793
160	1914	2307	2619	2931
170	1987	2404	2735	3066
180	2058	2500	2851	3201
190	2128	2595	2965	3335
200	2197	2688	3078	3468
210	2266	2781	3190	3599
220	2333	2873	3302	3730
230	2400	2965	3413	3861
240	2466	3055	3523	3990
250	2531	3145	3632	4119
260	2596	3234	3741	4247

Age: 18 To 36  
Physical Activity

Height: 5' 10" To 6' 1"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1585	1746	1901	2056
100	1686	1865	2038	2210
105	1736	1924	2105	2286
110	1784	1981	2171	2361
115	1833	2038	2237	2435
120	1880	2095	2302	2509
125	1927	2151	2367	2582
130	1973	2206	2430	2655
135	2019	2261	2494	2727
140	2065	2315	2557	2799
145	2109	2369	2619	2870
150	2154	2422	2681	2940
160	2241	2528	2804	3080
170	2328	2632	2925	3219
180	2412	2735	3045	3356
190	2496	2836	3164	3492
200	2578	2936	3181	3627
210	2659	3035	3398	3760
220	2739	3133	3513	3893
230	2819	3230	3627	4024
240	2897	3327	3741	4155
250	2974	3422	3854	4285
260	3051	3517	3965	4414

## How to Prepare Diet Plan

Age: 37 To 56

Height: 5' 10" To 6' 1"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1504	1694	1859	2024
100	1599	1810	1994	2177
105	1645	1867	2060	2252
110	1691	1923	2125	2327
115	1736	1979	2190	2401
120	1780	2034	2254	2474
125	1824	2088	2317	2546
130	1867	2142	2380	2619
135	1910	2195	2443	2690
140	1952	2248	2505	2762
145	1994	2300	2566	2832
150	2035	2353	2628	2903
160	2117	2455	2749	3042
170	2197	2557	2869	3180
180	2276	2657	2987	3317
190	2354	2756	3104	3453
200	2431	2854	3221	3588
210	2507	2951	3336	3721
220	2581	3047	3450	3854
230	2655	3142	3563	3985
240	2728	3236	3676	4116
250	2801	3329	3788	4246
260	2872	3422	3899	4376

Age: 57 To 76

Height: 5' 10" To 6' 1"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
90	1419	1640	1815	1990
100	1507	1752	1947	2142
105	1550	1807	2012	2216
110	1592	1862	2076	2290
115	1633	1916	2140	2364
120	1674	1969	2203	2436
125	1715	2022	2265	2509
130	1755	2074	2327	2581
135	1795	2126	2389	2652
140	1834	2177	2450	2723
145	1872	2228	2511	2793
150	1911	2279	2571	2863
160	1986	2379	2691	3002
170	2060	2478	2809	3140
180	3134	2575	2926	3277
190	2205	2672	3042	3412
200	2276	2767	3157	3546
210	2346	2862	3271	3680
220	2415	2955	3384	3812
230	2483	3048	3496	3944
240	2551	3140	3608	4075
250	2618	3231	3718	4205
260	2684	3322	3829	4335

**Table-2: Daily Caloric Expenditure- Men**

Age: 18 To 36

Height: 5' 2" To 5' 5"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1968	2425	2732	3040
140	2074	2566	2897	3227
145	2126	2636	2978	3321
150	2177	2705	3059	3414
155	2229	2774	3140	3506
160	2280	2842	3220	3598
165	2330	2910	3300	3690
170	2380	2978	3380	3782
175	2430	3046	3459	3873
180	2480	3113	3558	3964
185	2529	3180	3617	4054
190	2578	3247	3696	4145
200	2676	3379	3852	4324
210	2772	3511	4007	4503
220	2867	3641	4161	4681
230	2962	3771	4314	4857
240	3055	3899	4466	5033
250	3148	4027	4618	5209
260	3240	4154	4769	5383
270	3331	4281	4919	5557
280	3422	4407	5068	5730
290	3512	4532	5217	5902
300	3601	4656	5365	6074

Age: 37 To 56

Height: 5' 2" To 5' 5"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1853	2343	2661	2980
140	1922	2480	2822	3165
145	2001	2548	2902	3257
150	2049	2615	2982	3349
155	2097	2682	3061	3441
160	2145	2748	3140	3532
165	3193	2815	3219	3623
170	2240	2881	3297	3713
175	2286	2947	3375	3803
180	2333	3012	3453	3893
185	2379	3077	3530	3983
190	2425	3142	3607	4072
200	2517	3271	3760	4250
210	2607	3399	3913	4427
220	2696	3526	4065	4603
230	2785	3652	4215	4778
240	2873	3778	4365	4953
250	2960	3903	4515	5127
260	3046	4027	4663	5300
270	3132	4150	4811	5472
280	3117	4273	4959	5644
290	3302	4395	5105	5815
300	3386	4517	5251	5986

## How to Prepare Diet Plan

Age: 57 To 76  
Physical Activity

Height: 5' 2" To 5' 5"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1732	2257	2587	2916
140	1824	2389	2744	3100
145	1869	2455	2823	3191
150	1914	2520	2901	3281
155	1959	2585	2978	3372
160	2003	2650	3056	3462
165	2048	2714	3133	3551
170	2091	2778	3209	3641
175	2133	2842	3286	3730
180	2178	2905	3362	3819
185	2221	2969	3438	3907
190	2264	3032	3514	3996
200	2349	3157	3664	4172
210	2433	3282	3814	4347
220	2517	3405	3963	4522
230	2599	3528	4112	4695
240	2681	3650	4259	4868
250	2762	3772	4406	5040
260	2843	3893	4552	5212
270	2922	4013	4698	5383
280	3002	4133	4843	5553
290	3081	4252	4988	5723
300	3159	4371	5132	5893

Age: 18 To 36  
Physical Activity

Height: 5' 6" To 5' 9"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	2008	2465	2772	3079
140	2114	2607	2938	3268
145	2167	2677	3020	3362
150	2219	2747	3101	3456
155	2271	2816	3183	3549
160	2323	2885	3264	3642
165	2374	2954	3344	3734
170	2425	3023	3424	3826
175	2475	3091	3504	3918
180	2525	3158	3584	4009
185	2575	3226	3663	4100
190	2625	3293	3742	4191
200	2723	3426	3899	4372
210	2820	3559	4055	4551
220	2917	3690	4210	4730
230	3012	3821	4364	4908
240	3106	3950	4518	5085
250	3200	4079	4670	5261
260	3293	4207	4822	5436
270	3385	4335	4973	5611
280	3476	4461	5123	5784
290	3567	4587	5272	5958
300	3657	4713	5421	6130

Age: 37 To 56  
Physical Activity

Height: 5' 6" To 5' 9"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1892	2383	2701	3019
140	1993	2521	2863	3206
145	2042	2589	2944	3299
150	2091	2657	3024	3391
155	2140	2724	3104	3483
160	2188	2792	3183	3575
165	2236	2859	3262	3666
170	2284	2925	3341	3757
175	2331	2991	3420	3848
180	2378	3057	3498	3938
185	2425	3123	3576	4029
190	2472	3188	3653	4118
200	2564	3318	3808	4297
210	2655	3447	3961	4475
220	2746	3575	4114	4652
230	2835	3703	4266	4829
240	2924	3829	4417	5004
250	3012	3955	4567	5179
260	3099	4080	4716	5353
270	3186	4204	4865	5528
280	3272	4328	5013	5698
290	3357	4451	5161	5870
300	3442	4573	5308	6042

Age: 57 To 76  
Physical Activity

Height: 5' 6" To 5' 9"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1771	2296	2626	2956
140	1865	2430	2785	3140
145	1911	2496	2864	3232
150	1956	2562	2943	3323
155	2002	2628	3021	3414
160	2047	2693	3099	3505
165	2091	2758	3176	3595
170	2136	2822	3254	3685
175	2180	2887	3331	3775
180	2224	2951	3407	3864
185	2267	3015	3484	3953
190	2311	3078	3560	4042
200	2397	3204	3712	4219
210	2482	3330	3863	4395
220	2566	3455	4013	4571
230	2649	3578	4162	4745
240	2732	3701	4310	4919
250	2814	3824	4458	5092
260	2895	3946	4605	5265
270	2976	4067	4752	5437
280	3056	4187	4898	5608
290	3136	4307	5043	5779
300	3215	4427	5188	5949

## How to Prepare Diet Plan

Age: 18 To 36

Height: 5' 10" To 6' 1"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	2047	2504	2812	3119
140	2155	2648	2978	3309
145	2209	2718	3061	3404
150	2261	2789	3143	3498
155	2314	2859	3225	3591
160	2366	2929	3307	3685
165	2418	2998	3388	3778
170	2469	3067	3469	3870
175	2520	3136	3549	3963
180	2571	3204	3629	4054
185	2621	3272	3709	4146
190	2671	3339	3788	4237
200	2770	3474	3946	4419
210	2869	3607	4103	4600
220	2966	3740	4259	4779
230	6032	3871	4414	4958
240	3157	4002	4569	5136
250	3252	4131	7422	5313
260	3346	4260	4874	5489
270	3439	4388	5026	5664
280	3531	4516	5177	5839
290	3623	4643	5328	6013
300	3714	4769	5477	6186

Age: 37 To 56

Height: 5' 10" To 6' 1"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1932	2422	2741	3059
140	2033	2562	2904	3247
145	2048	2630	2985	3340
150	2133	2699	3066	3433
155	2182	2767	3146	3526
160	2231	2835	3226	3618
165	2280	2902	3306	3710
170	2328	2969	3385	3802
175	2376	3036	3464	3893
180	2424	3103	3543	3984
185	2471	3169	3622	4074
190	2518	3235	3700	4165
200	2611	3366	3855	4345
210	2704	3496	4010	4524
220	2795	3625	4163	4702
230	2885	3753	4316	4878
240	2975	3880	4468	5055
250	3064	4007	4619	5231
260	3152	4133	4769	5405
270	3240	4258	4919	5580
280	3326	4382	5068	5753
290	3412	4506	5216	5926
300	3498	4629	5364	6098

Age: 57 To 76  
Physical Activity

Height: 5' 10" To 6' 1"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1811	2336	2666	2996
140	1905	2471	2826	3181
145	1952	2538	2906	3273
150	1998	2604	2985	3365
155	2044	2670	3064	3457
160	2090	2736	3142	3548
165	2135	2802	3220	3639
170	2180	2867	3298	3729
175	2225	2932	3376	3820
180	2269	2996	3453	3909
185	2313	3060	3530	3999
190	2357	3125	3607	4089
200	2444	3252	3759	4267
210	2530	3378	3911	4444
220	2615	3504	4062	4620
230	2700	3629	4212	4796
240	2783	3753	4361	4970
250	2866	3876	4510	5144
260	2948	3999	4658	5318
270	3030	4120	4805	5490
280	3111	4242	4952	5663
290	3191	4363	5098	5834
300	3271	4483	5244	6005

Age: 18 To 36  
Physical Activity

Height: 6' 2" To 6' 5"

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	2087	2544	2451	3158
140	2196	2688	3019	3350
145	2250	2760	3103	3445
150	2303	2831	3185	3540
155	2356	2902	3268	3634
160	2409	2972	3350	3728
165	2461	3042	3432	3821
170	2513	3111	3513	3915
175	2565	3180	3594	4007
180	2616	3249	3674	4100
185	2667	3318	3755	4192
190	2718	3386	3835	4284
200	2818	3521	3994	4466
210	2917	3656	4152	4648
220	3015	3789	4309	4829
230	3112	3921	4465	5008
240	3209	4053	4620	5187
250	3304	4183	4774	5365
260	3399	4313	4927	5542
270	3492	4442	5080	5718
280	3586	4570	5232	5893
290	3678	4698	5383	6068
300	3770	4825	5534	6242

## How to Prepare Diet Plan

Age: 37 To 56

Height: 6' 2" To 6' 5"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1972	2462	2780	3098
140	2074	2602	2945	3288
145	2125	2672	3027	3382
150	2175	2741	3108	3475
155	2225	2810	3189	3568
160	2275	2878	3270	3661
165	2324	2949	3350	3754
170	2373	3014	3430	3846
175	2421	3081	3509	3938
180	2469	3148	3589	4029
185	2517	3215	3668	4120
190	2565	3281	3746	4211
200	2659	3413	3903	4392
210	2752	3544	4058	4572
220	2844	3674	4213	4751
230	2936	3803	4366	4929
240	3026	3931	4519	5106
250	3116	4059	4671	5283
260	3205	4186	4822	5458
270	3293	4312	4972	5633
280	3381	4437	5122	5808
290	3468	4561	5271	5981
300	3554	4686	5420	6154

Age: 57 To 76

Height: 6' 2" To 6' 5"

Physical Activity

Weight (LBS.)	Light	Average	Moderately Heavy	Heavy
130	1851	2376	2705	3035
140	1946	2512	2867	3222
145	1993	2579	2947	3315
150	2040	2646	3027	3407
155	2087	2713	3106	3499
160	2133	2779	3185	3591
165	2179	2845	3264	3682
170	2224	2911	3342	3774
175	2270	2976	3420	3864
180	2314	3042	3498	3955
185	2359	3106	3576	4045
190	2403	3171	3653	4135
200	2491	3299	3807	4314
210	2578	3427	3959	4492
220	2665	3553	4111	4669
230	2750	3679	4262	4846
240	2834	3804	4413	5021
250	2918	3928	4562	5196
260	3001	4051	4711	5371
270	3084	4174	4859	5544
280	3165	4296	5007	5717
290	3247	4418	5154	5889
300	3327	4539	5300	6060

**Diet Plan****Breakfast # 1**

Bacon	2 slices
Egg, cooked	1 egg
Milk, skim	1 cup
Peaches, cooked, unsweetened, and juice	½ cup
Orange juice	½ cup

---

 430 calories
**Breakfast # 2**

Egg, scrambled, milk added	1 egg
Special K cereal	1 oz.
Milk, whole	1 cup
Grapefruit	½ grapefruit

---

 425 calories
**Breakfast # 3**

Corned beef hash	3 oz.
Toast, white bread	1 slice
Yogurt made from skim milk, commercial, plain	1 cup
Tomato juice	1 cup

---

 400 calories
**Breakfast # 4**

Bacon	2 slices
Muffin, 3 in, diameter	1 muffin
Jelly	1 tbsp.
Wheaties cereal	1 oz.
Milk, skim	1 cup
Orange juice	½ cup

---

 520 calories

[N.B: 1 ounce (oz.) = 28.35 gm]

## How to Prepare Diet Plan

### Breakfast # 5

Chipped beef	2 oz.
Egg, cooked	1 egg
Milk, skim	1 cup
Cantaloupe	½ melon

---

345 calories

### Breakfast # 6

Bacon	2 slices
Toast, white bread	1 slice
Margarine	1 pat
Cheerios cereal	1 oz.
Milk, whole	1 cup
Orange juice	1 cup

---

590 calories

### Breakfast # 7

Pork links	2 links
Toast, whole wheat	1 slice
Apricots, cooked	½ cup
Milk, skim	1 cup
Tangerine	1 tangerine

---

440 calories

### Breakfast # 8

Pork links	2 links
Yogurt made from skim milk, commercial, plain	1 cup
Maypo 30-Second Oatmeal	1 oz.
Apple	1 apple

---

430 calories

### Breakfast # 9

Chipped beef	2 oz.
Toast, whole wheat	1 slice
Yogurt made from skim milk, commercial, plan	1 cup
Orange juice	½ cup

---

365 calories

**Breakfast # 10**

Pancake, 4 in. diameter	1 cake
Syrup	1 tbsp.
Post Raisin Bran cereal	1 oz.
Milk, whole	1 cup
Grapefruit	½ grapefruit

---

 425 calories
**Lunch # 1**

Chicken, canned	3 oz.
Asparagus, canned	1 cup
Cheese	1 oz.
Orange	1 orange

---

 380 calories
**Lunch # 2**

Tuna	3 oz.
Cheese	1 oz.
Bread, white	1 slice
Lettuce	4 leaves
Tomato juice	1 cup

---

 415 calories
**Lunch # 3**

Hamburger, lean	3 oz.
Hamburger roll	1 roll
Cheese	1 oz.
Lettuce	2 leave
Tomato	¼ tomato
Pickle, dill	1 pickle
Orange	1 orange

---

 505 calories

## How to Prepare Diet Plan

### Lunch # 4

Stew, beef and vegetable	2 cup
Milk, skim	1 cup
Grapfruit	½ grapefruit
<hr/>	
555 calories	

### Lunch # 5

Hamburger, lean	3 oz.
Pickle, dill	1 pickle
Milk, skim	1 cup
Watermelon	1 wedge
Carrot	½ carrot
<hr/>	
410 calories	

### Lunch # 6

Salami	1 oz.
Bread, white	2 slices
Cheese	1 oz.
Lettuce	2 leaves
Pickle, dill	1 pickle
Tomato juice	1 cup
<hr/>	
450 calories	

### Lunch # 7

Corned beef	3 oz.
Hamburger roll	1 roll
Lettuce	2 leaves
Tomato	¼ tomato
Milk, skim	1 cup
Plum	2 plums
<hr/>	
465 calories	

**Lunch # 8**

Shrimp, canned	3 oz.
Bread, white	2 slices
Yogurt made from skim milk, commercial, plain	1 cup
Tomato juice	1 cup

---

 420 calories
**Lunch # 9**

Chipped beef	3 oz.
Bread, whole wheat	1 slice
Lettuce	2 leaves
Milk, skim	1 cup
Strawberries	1 cup

---

 393 calories
**Lunch # 10**

Clams, canned	3 oz.
French fries	10 pieces
Bread, whole wheat	1 slice
Milk, skim	1 cup
Strawberries	1 cup
Carrot	½ carrot

---

 390 calories
**Dinner # 1**

Chicken, flesh, light meat	3 oz.
Potato, mashed, milk added	1 cup
Spinach, cooked	½ cup
Sauerkraut, canned	1 cup
Lettuce	2 leaves
Tomato juice	1 cup

---

 360 calories

## How to Prepare Diet Plan

### Dinner # 2

Pork chop, lean meat only	1.7 oz.
Yellow beans, canned	1 cup
Cheese	½ cup
Bread, whole wheat	2 slices
Strawberries	1 cup
Carrot	1 carrot

---

430 calories

### Dinner # 3

Veal cutlet	3 oz.
Potato, boiled	2 potatoes
Dandelion greens	1 cup
Peach	1 peach

---

490 calories

### Dinner # 4

Steak, lean, broiled	2.4 oz.
Potato, baked	1 potato
Spinach, cooked	1 cup
Milk, skim	1 cup
Cantaloupe	½ melon

---

410 calories

### Dinner # 5

Chipped beef	3 oz.
Peas, cooked	½ cup
Lettuce	2 leaves
Carrot	½ carrot
Milk, skim	1 cup
Strawberries	1 cup

---

396 calories

**Dinner # 6**

Ham, cured, roasted	3 oz.
Asparagus, canned	1 cup
Cheese	1 oz.
Peaches, cooked	½ cup

---

 515 calories
**Dinner # 7**

Hamburger, lean	3 oz.
Potato, mashed, milk added	1 cup
Spinach, cooked	1 cup
Orange	1 cup

---

 415 calories
**Dinner # 8**

Shrimp, canned	3 oz.
Squash, summer	¾ cup
Asparagus, canned	¾ cup
Bread, whole wheat	2 slices
Lettuce	3 leaves
Peaches, sliced	1 cup

---

 367 calories
**Dinner # 9**

Liver, beef, fried	2 oz.
Potato, baked	1 potato
Brussels Sprouts	1 cup
Cheese	1 oz.
Orange	1 orange

---

 445 calories
**Dinner # 10**

Oysters, raw	1 cup
Broccoli	1 cup
Bread, white	1 slice

---

 270 calories

# Table

**Table-3 Recommended Daily Dietary Allowances**

	Age (years)	Weight (kg)		Height		Energy	Protein	Vitamin A	Ascor- bic Acid	Nia- cin	Ribo- flavin	Thia- min	Cal- cium	Iron
		(kg)	(lbs)	(cm)	(in)	kcal	(g)	(IU)	(mg)	(mg)	(mg)	(mg)	(grams)	(mg)
Infants	0.0-0.5	6	14	60	24	kg×117	kg×2.2	1,400	35	5	0.4	0.3	360	10
	0.5-0.5	9	20	71	28	kg×108	kg×2.0	2,000	35	8	0.6	0.5	540	15
Children	1-3	13	28	86	34	1,300	23	2,000	40	9	0.8	0.7	800	15
	4-6	20	44	110	44	1,800	30	2,500	40	12	1.1	0.9	800	10
	7-10	30	66	135	54	2,400	36	3,300	40	16	1.2	1.2	800	10
Males	11-14	44	97	158	63	2,800	44	5,000	45	18	1.5	1.4	1,200	18
	15-18	61	134	172	69	3,000	54	5,000	45	20	1.8	1.5	1,200	18
	19-22	67	147	172	69	3,000	54	5,000	45	20	1.8	1.5	800	10
	23-50	70	154	172	69	2,700	56	5,000	45	18	1.6	1.4	800	10
	51+	70	154	172	69	2,400	56	5,000	45	16	1.5	1.2	800	10
Females	11-14	44	97	155	62	2,400	44	4,000	45	16	1.3	1.2	1,200	18
	15-18	54	119	162	65	2,100	48	4,000	45	14	1.4	1.1	1,200	18
	19-22	58	128	162	65	2,100	46	4,000	45	16	1.4	1.2	800	18
	23-50	58	128	162	65	2,000	46	4,000	45	13	1.2	1.0	800	18
	51+	58	128	162	65	1,800	46	4,000	45	12	1.1	1.0	800	10
Pregnant						+300	+30	5,000	60	+2	+0.3	+0.3	1,200	18+
Lactating						+500	+20	6,000	80	+4	+0.5	+0.3	1,200	18

**Special diet plan in disease conditions:**

**Table 4: Food table 1 for diabetic person**

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti Two Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Egg	29	45.24	5.10	2.70	0.15	1.60	0.44	218.08	0.00	0.02	0.04	0.00	22.97
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Morning 11 A.M Muri/Biscuit</b>	15	53.10	1.13	0.02	12.09	3.45	0.99	0.00	0.05	0.03	0.02	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 1.5 Cup	180	219.60	3.78	0.18	47.34	5.40	2.34	0.00	0.18	0.18	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	25	35.25	8.43	1.00	0.41	76.44	1.08	23.25	0.00	0.01	0.03	0.88	4.05
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable:Group A As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable: Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 1 Piece	30	69.60	2.40	0.30	14.10	9.90	2.40	6.00	0.30	0.09	0.06	0.00	7.20
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	12	108.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	751	999.99	40.98	24.33	153.89	475.84	23.36	7043.19	6.34	0.83	0.65	117.95	121.94

Table 5: Food table 2 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti Two Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Egg	30	46.80	5.28	2.79	0.15	1.65	0.45	225.60	0.00	0.02	0.04	0.00	23.76
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	45	43.65	0.50	0.14	10.13	12.29	0.81	41.13	0.68	0.09	0.05	40.01	0.00
<b>11 Am Muri/Biscuit</b>	25	88.50	1.88	0.03	20.15	5.75	1.65	0.00	0.08	0.05	0.03	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 2 Cup	180	219.60	3.78	0.18	47.34	5.40	2.34	0.00	0.18	0.18	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 2 Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	20	180.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>820</b>	<b>1200.15</b>	<b>46.16</b>	<b>32.98</b>	<b>179.51</b>	<b>507.48</b>	<b>26.92</b>	<b>7075.07</b>	<b>6.89</b>	<b>0.98</b>	<b>0.74</b>	<b>131.46</b>	<b>130.74</b>

Table 6: Food table for heart disease

Food Items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Ruti/Bread	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Vegetable (Cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	13.56
Oil	5	45.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dhal/White Part Of Egg	60	69.00	4.98	0.18	11.88	14.40	1.32	31.92	0.18	0.12	0.06	0.00	17.58
Tea (Sugar,Milk)	10	44.70	1.29	1.34	6.87	3.10	0.03	0.00	0.00	0.02	0.07	0.20	0.00
Fruit (Orange/Guava/Apple)	50	25.00	1.00	0.00	5.50	11.50	1.50	783.50	0.50	0.00	0.00	5.00	0.00
Before Noon (Biscuit)	10	28.90	0.47	1.66	3.04	11.50	0.35	288.00	1.15	0.00	0.00	0.25	0.00
<b>Noon</b> (Bhat)	225	274.50	4.73	0.23	59.18	6.75	2.93	0.00	0.23	0.23	0.00	0.00	0.00
Leafy Veg (Cooked)	60	28.20	1.80	0.00	4.80	16.20	0.60	390.00	0.00	0.00	0.00	3.00	9.00
Salad	60	13.20	0.96	0.06	2.10	8.40	0.90	0.00	0.24	0.10	0.01	3.00	8.82
Fish/Chicken	40	56.40	13.48	1.60	0.66	122.30	1.72	37.20	0.00	0.02	0.04	1.40	6.48
Mug Dhal	60	69.00	4.98	0.18	11.88	14.40	1.32	31.92	0.18	0.12	0.06	0.00	17.58
Oil	10	90.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Night</b> (Bread/Ruti)	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Vegetable	60	38.40	1.74	0.42	6.30	136.62	2.58	1750.20	0.96	0.84	0.07	16.80	6.78
Salad	60	13.20	0.96	0.06	2.10	8.40	0.90	0.00	0.24	0.10	0.01	3.00	8.82
Fish/Chicken	40	56.40	13.48	1.60	0.66	122.30	1.72	37.20	0.00	0.02	0.04	1.40	6.48
Oil	7	63.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Before Bed (Milk)	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
Sugar With Milk	12	47.76	0.00	0.00	11.93	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1129</b>	<b>1398.26</b>	<b>66.79</b>	<b>36.29</b>	<b>201.17</b>	<b>946.15</b>	<b>30.87</b>	<b>6894.74</b>	<b>6.80</b>	<b>3.65</b>	<b>0.96</b>	<b>70.05</b>	<b>134.10</b>

Table-7: Values of common Bangladeshi food items (all values per 100 gms. of edible portion)

Name of foodstuff	Protein (gm)	Fat (gm)	Minerals (gm)	Carbohydrate (gm)	Energy (Kcal)
<b>Cereal Grains and Products</b>					
Rice, parboiled milled	6.4	0.4	0.7	79.0	346
Wheat flour (whole)	12.1	1.7	2.7	69.4	341
<b>Pulses and Legumes</b>					
Bengal gram (whole)	17.1	5.3	3.0	60.9	360
Lentil	25.1	0.7	2.1	56.0	343
Groundnut	25.3	40.1	2.4	26.1	567
<b>Roots and Tubers</b>					
Carrot	0.9	0.2	1.1	10.6	48
Potato	1.6	0.1	0.6	22.6	97
Sweet potato	1.2	0.3	1.0	28.2	120
<b>Vegetables</b>					
Impomoea leaves (Kalmi sak)	2.9	0.4	2.1	3.1	28
Spinach (Pui Sak)	2.0	0.7	1.7	2.9	26
Bitter gourd, small	2.1	1.0	1.4	10.6	60
Brinjal (Eggplant)	1.4	0.3	0.3	4.0	24
Cauliflower	2.6	0.4	1.0	4.0	30
Cabbage	1.8	0.1	0.6	4.6	27
Drumstick	2.5	0.1	2.0	3.7	26
Peas	7.2	0.1	0.8	15.9	93
<b>Fruits</b>					
Guava	0.9	0.3	0.7	11.2	51
Lichi	1.1	0.2	0.5	13.6	61
Mango, ripe	0.6	0.4	0.4	16.9	74
Papaya, ripe	0.6	0.1	0.5	7.2	32
Pineapple	0.4	0.1	0.4	10.8	46
<b>Fish and Other Animal Food</b>					
Boal	15.4	2.7	1.3	7.6	116
Hilsa	21.8	19.4	2.2	2.9	273
Kalabaus	14.7	1.0	1.3	2.0	76
Katla	19.5	2.4	1.5	2.9	111
Koi	14.8	8.8	2.0	4.4	156
Magur	15.0	1.0	1.3	4.2	86
Pangas	14.2	10.8	1.0	1.7	161
Prawn	19.1	1.0	1.7	0.8	89
Singhi	22.8	0.6	1.7	6.9	124
Tengra	19.2	6.4	2.1	2.3	144
Beef	22.6	2.6	1.0	--	114
Egg (hen)	13.3	13.3	1.0	--	173
Fowl	25.9	0.6	1.3	--	109
Mutton	18.5	13.3	1.3	--	194
Milk (cow)	3.2	4.1	0.8	4.4	67
Milk (human)	1.1	3.4	0.1	7.4	65
<b>Fats and Edible Oils</b>					
Butter	--	81.0	2.5	--	729
Ghee (cow)	--	100.0	--	--	900
Cooking oil	--	100.0	--	--	900

Table 1: Foods table for children aged 6-12 months

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Soft Rice	58	211.70	3.71	0.23	45.82	5.22	2.32	0.00	0.12	0.12	0.05	0.00	6.38
Ruri & Milk	100	204.00	8.00	3.00	37.00	89.00	6.00	23.00	1.00	0.30	0.20	1.00	22.00
Kichuri	50	71.50	2.00	0.50	14.00	5.50	1.00	3.50	0.00	0.00	0.00	0.00	5.00
Potato	30	29.10	0.48	0.18	6.78	3.30	0.21	0.00	0.12	0.01	0.01	3.00	2.10
Vegetable	58	37.12	1.68	0.41	6.09	132.07	2.49	1691.86	0.93	0.81	0.06	16.24	6.55
Banana	100	50.00	0.50	1.00	9.50	11.00	1.20	0.00	1.00	0.00	0.04	11.00	0.00
Egg	50	90.50	6.75	6.85	0.40	3.50	1.50	752.00	0.00	0.06	0.13	0.00	39.15
Total	446	693.92	23.12	12.17	119.59	249.59	14.72	2470.36	3.16	1.30	0.50	31.24	81.18

Table 2: Foods table for children aged 1-3 years

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice/Pitha/Muri/Chira	100	365.00	6.40	0.40	79.00	9.00	4.00	0.00	0.20	0.21	0.09	0.00	11.00
Pulse	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Riti/Biscuit	58	197.78	7.02	0.99	40.25	27.84	6.67	16.82	1.10	0.28	0.17	0.00	20.76
Leafy Vegetable	58	44.08	2.38	0.64	4.93	152.02	5.34	3928.05	1.22	2.09	0.12	32.65	5.63
Non Leafy Vegetable	30	17.10	0.63	0.12	3.48	62.16	0.42	186.00	0.39	0.02	0.02	3.30	0.00
Sweet Potato	58	69.60	0.70	0.17	16.36	11.60	0.46	0.00	0.46	0.03	0.12	1.16	0.00
Potato	30	29.10	0.48	0.18	6.78	3.30	0.21	0.00	0.12	0.01	0.01	3.00	2.10
Oil	10	90.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fish Or Meat	30	42.30	10.20	1.20	0.60	91.80	1.20	27.90	0.00	0.01	0.03	1.20	4.80
Payes (suji+milk+sugar)	200	329.60	6.01	13.40	13.60	209.20	0.40	27.20	0.00	0.00	0.40	0.00	13.60
Fruit	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
Total	654	1322.2	41.52	27.99	190.22	608.00	21.50	4669.29	5.30	2.84	1.09	62.34	88.21

Table 3: Foods table for children aged 4-6 years

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice/Cake/Muri/Chira	145	529.25	9.28	0.58	114.55	13.05	5.80	0.00	0.29	0.30	0.13	0.00	15.95
Ruti/Biscuit	58	199.52	13.63	1.04	33.87	49.07	4.06	54.75	0.99	0.28	0.19	0.06	57.65
Pulse	40	136.40	4.84	0.68	27.76	19.20	4.60	11.60	0.76	0.20	0.12	0.00	14.32
Leafy Vegetable	58	44.08	2.38	0.64	4.93	152.02	5.34	3928.05	1.22	2.09	0.12	32.65	5.63
Non Leafy Vegetable	40	22.80	0.84	0.16	4.64	82.88	0.56	248.00	0.52	0.03	0.03	4.40	0.00
Sweet Potato	58	69.60	0.70	0.17	16.36	11.60	0.46	0.00	0.46	0.03	0.12	1.16	0.00
Oil	25	225.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fish/Meat	30	42.30	10.20	1.20	0.60	91.80	1.20	27.90	0.00	0.01	0.03	1.20	4.80
Potato	58	56.26	0.93	0.35	13.11	6.38	0.41	0.00	0.23	0.02	0.02	5.80	4.06
Payes (Suji+Milk+Sugar)	200	329.60	6.01	13.40	13.60	209.20	0.40	27.20	0.00	0.00	0.40	0.00	13.60
Fruit	70	48.30	0.91	0.49	10.78	21.98	0.98	637.00	1.82	0.06	0.06	29.40	0.70
Total	782	1703.1	49.72	43.71	240.20	657.18	23.81	4934.50	6.29	3.02	1.21	74.67	116.71

Table 4: Foods table for children aged 7-9 years

Food Items	0	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice	290	1058.5	18.56	1.16	229.10	26.10	11.60	0.00	0.58	0.61	0.26	0.00	31.90
Pulse	58	197.78	7.02	0.99	40.25	27.84	6.67	16.82	1.10	0.28	0.17	0.00	20.76
Green Leafy	58	44.08	2.38	0.64	4.93	152.02	5.34	3928.05	1.22	2.09	0.12	32.65	5.63
Sweet Potato	70	84.00	0.84	0.21	19.74	14.00	0.56	0.00	0.56	0.04	0.14	1.40	0.00
Non Leafy Vegetable	30	17.10	0.63	0.12	3.48	62.16	0.42	186.00	0.39	0.02	0.02	3.30	3.39
Fish/Meat/Egg	58	82.94	22.33	2.26	1.45	266.22	2.73	49.59	0.01	0.01	0.03	2.90	4.99
Oil	25	225.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sugar/Gur	25	94.50	0.50	0.00	23.50	38.00	1.50	14.00	0.00	0.00	0.00	0.00	0.00
Fruit	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
Milk	225	150.75	7.20	9.23	9.90	292.50	0.45	38.25	0.00	0.11	0.43	4.50	19.13
Total	889	1989.15	60.11	39.95	340.05	894.54	29.96	4687.71	5.16	3.21	1.21	65.75	86.29

Table 5: Foods table for children aged 10-14 years

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice	348	1270.20	22.27	1.39	274.92	31.32	13.92	0.00	0.70	0.73	0.31	0.00	38.28
Pulse	58	197.78	7.02	0.99	40.25	27.84	6.67	16.82	1.10	0.28	0.17	0.00	20.76
Green Leafy	58	44.08	2.38	0.64	4.93	152.02	5.34	3928.05	1.22	2.09	0.12	32.65	5.63
Sweet Potato	116	139.20	1.39	0.35	32.71	23.20	0.93	0.00	0.93	0.07	0.23	2.32	0.00
Others Vegetable	116	66.12	2.44	0.46	13.46	240.35	1.62	719.20	1.51	0.08	0.08	12.76	13.11
Fish/Meat/Egg	58	82.94	22.33	2.26	1.45	266.22	2.73	49.59	0.01	0.01	0.03	2.90	4.99
Oil	30	270.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sugar/Gur	58	219.24	1.16	0.00	54.52	88.16	3.48	32.48	0.00	0.00	0.00	0.00	0.00
Fruit	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
Milk	225	150.75	7.20	9.23	9.90	292.50	0.45	38.25	0.00	0.11	0.43	4.50	19.13
Total	1117	2474.81	66.84	45.67	439.84	1137.31	35.83	5239.39	6.76	3.42	1.41	76.13	102.39

Table 6: Foods table for boys aged 15-18 years

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice	440	1606.00	28.16	1.76	347.60	39.60	17.60	0.00	0.88	0.92	0.40	0.00	48.40
Pulse	58	197.78	7.02	0.99	40.25	27.84	6.67	16.82	1.10	0.28	0.17	0.00	20.76
Green Leafy	58	44.08	2.38	0.64	4.93	152.02	5.34	3928.05	1.22	2.09	0.12	32.65	5.63
Sweet Potato	116	139.20	1.39	0.35	32.71	23.20	0.93	0.00	0.93	0.07	0.23	2.32	0.00
Others Vegetable	88	50.16	1.85	0.35	10.21	182.34	1.23	545.60	1.14	0.06	0.06	9.68	9.94
Fish/Meat/Egg	60	85.80	23.10	2.34	1.50	275.40	2.82	51.30	0.01	0.01	0.03	3.00	5.16
Oil	35	315.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sugar/Gur	58	219.24	1.16	0.00	54.52	88.16	3.48	32.48	0.00	0.00	0.00	0.00	0.00
Fruit	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
Milk	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
Total	1083	2772.16	69.55	46.69	504.70	960.25	39.01	5049.65	6.58	3.54	1.28	71.05	100.59

Table 7: Foods table for adult female

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice	350	1277.50	22.40	1.40	276.50	31.50	14.00	0.00	0.70	0.74	0.32	0.00	38.50
Pulse	44	150.04	5.32	0.75	30.54	21.12	5.06	12.76	0.84	0.22	0.13	0.00	15.75
Leafy Veg	116	88.16	4.76	1.28	9.86	304.04	10.67	7856.10	2.44	4.18	0.23	65.31	11.25
Others Vegetable	87	49.59	1.83	0.35	10.09	180.26	1.22	539.40	1.13	0.06	0.06	9.57	9.83
Sweet Potato	58	69.60	0.70	0.17	16.36	11.60	0.46	0.00	0.46	0.03	0.12	1.16	0.00
Fish/Meat/Egg	58	82.94	22.33	2.26	1.45	266.22	2.73	49.59	0.01	0.01	0.03	2.90	4.99
Oil	40	360.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fruit	100	69.00	1.30	0.70	15.40	31.40	1.40	910.00	2.60	0.08	0.09	42.00	1.00
Total	853	2146.83	58.63	46.91	360.19	846.14	35.54	9367.85	8.18	5.31	0.97	120.94	81.32

Table 8: Foods table for adolescent girl

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 3 piece	90	208.80	7.20	0.90	42.30	29.70	7.20	18.00	0.90	0.27	0.18	0.00	21.60
Egg	50	78.00	8.80	4.65	0.25	2.75	0.75	376.00	0.00	0.03	0.07	0.00	39.60
vegetable (raw)	50	32.00	1.45	0.35	5.25	113.85	2.15	1458.50	0.80	0.70	0.06	14.00	5.65
fruit:(tok)	30	15.98	0.40	0.05	3.54	6.35	0.40	238.64	1.77	0.02	0.01	23.78	0.00
11 am biscuit 2 piece	14	40.46	0.66	2.32	4.26	16.10	0.49	403.20	1.61	0.00	0.00	0.35	0.00
fruit: any (sweet)	50	24.55	0.58	0.38	5.27	14.77	0.55	251.64	0.34	0.07	0.05	22.05	0.00
<b>noon</b> bhat 3 cup	315	384.30	6.62	0.32	82.85	9.45	4.10	0.00	0.32	0.32	0.00	0.00	0.00
fish/meat 2 piece (small)	60	84.60	20.22	2.40	0.99	183.45	2.58	55.80	0.00	0.02	0.06	2.10	9.72
dhal (1.5 cup ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
non leafy vegetable (raw)	60	34.20	1.26	0.24	6.96	124.32	0.84	372.00	0.78	0.04	0.04	6.60	7.20
leafy vegetable (raw)	30	22.80	1.23	0.33	2.55	78.63	2.76	2031.75	0.63	1.08	0.06	16.89	2.91
<b>afternoon</b> milk 1 cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>biscuit/(lodus)</b> 2 piece	14	40.46	0.66	2.32	4.26	16.10	0.49	403.20	1.61	0.00	0.00	0.35	0.00
<b>night</b> bhat 2.5 cup	270	329.40	5.67	0.27	71.01	8.10	3.51	0.00	0.27	0.27	0.00	0.00	0.00
dhal (2 cup medium ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
non leafy vegetable (raw)	60	34.20	1.26	0.24	6.96	124.32	0.84	372.00	0.78	0.04	0.04	6.60	7.20
chiken	30	51.90	3.99	3.99	0.00	18.00	0.63	502.20	0.00	0.03	0.12	0.00	2.04
oil*	28	252.00	0.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
before bed milk 1 cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Total</b>	<b>1451</b>	<b>2000.85</b>	<b>81.77</b>	<b>57.68</b>	<b>282.03</b>	<b>1108.66</b>	<b>31.96</b>	<b>6580.36</b>	<b>10.82</b>	<b>3.30</b>	<b>1.34</b>	<b>97.58</b>	<b>175.96</b>

Table 9: Foods table for adult female

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice	350	1277.50	22.40	1.40	276.50	31.50	14.00	0.00	0.70	0.74	0.32	0.00	38.50
pulse	44	150.04	5.32	0.75	30.54	21.12	5.06	12.76	0.84	0.22	0.13	0.00	15.75
leafy veg	116	88.16	4.76	1.28	9.86	304.04	10.67	7856.10	2.44	4.18	0.23	65.31	11.25
others vegetable	87	49.59	1.83	0.35	10.09	180.26	1.22	539.40	1.13	0.06	0.06	9.57	9.83
sweet potato	58	69.60	0.70	0.17	16.36	11.60	0.46	0.00	0.46	0.03	0.12	1.16	0.00
fish/meat/egg	58	82.94	22.33	2.26	1.45	266.22	2.73	49.59	0.01	0.01	0.03	2.90	4.99
oil	40	360.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fruit	100	69.00	1.30	0.70	15.40	31.40	1.40	910.00	2.60	0.08	0.09	42.00	1.00
Total	853	2146.83	58.63	46.91	360.19	846.14	35.54	9367.85	8.18	5.31	0.97	120.94	81.32

Table 10: Foods table for menstruations period

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 4 piece	120	278.4	9.60	1.20	56.40	39.60	9.60	24.00	1.20	0.36	0.24	0.00	28.80
egg	35	54.60	6.16	3.26	0.18	1.93	0.53	263.20	0.00	0.02	0.05	0.00	27.72
vegetable 1 cup (cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	13.56
fruit (tok)	40	21.31	0.53	0.07	4.72	8.47	0.53	318.18	2.36	0.03	0.02	31.71	0.00
<b>11 am</b> biscuit 2 piece	14	40.46	0.66	2.32	4.26	16.10	0.49	403.20	1.61	0.00	0.00	0.35	0.00
fruit (sweet)	50	24.55	0.58	0.38	5.27	14.77	0.55	251.64	0.34	0.07	0.05	22.05	0.00
<b>noon</b> bhat 4 cup	360	439.20	7.56	0.36	94.68	10.80	4.68	0.00	0.36	0.36	0.00	0.00	0.00
fish 2 piece	60	85.80	25.62	2.16	1.92	347.76	3.06	27.60	0.00	0.01	0.01	3.00	0.00
dhal (1 cup medium ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
leafy vegetable 0.5 cup	60	38.40	1.74	0.42	6.30	136.62	2.58	1750.20	0.96	0.84	0.07	16.80	6.78
cucumber	60	13.20	0.96	0.06	2.10	8.40	0.90	0.00	0.24	0.10	0.01	3.00	0.00
<b>afternoon</b> biscuit 2 piece	14	40.46	0.66	2.32	4.26	16.10	0.49	403.20	1.61	0.00	0.00	0.35	0.00
<b>fruit</b>	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
<b>night</b> bhat 3 cup	270	626.40	21.60	2.70	126.90	89.10	21.60	54.00	2.70	0.81	0.54	0.00	64.80
chicken 1 piece	30	51.90	3.99	3.99	0.00	18.00	0.63	502.20	0.00	0.03	0.12	0.00	2.04
dhal (1 cup medium ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
vegetable 1 cup (cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	13.56
milk 1 cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
oil*	58	522.00	0.00	58.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1611</b>	<b>2608.3</b>	<b>98.15</b>	<b>84.73</b>	<b>362.67</b>	<b>1451.2</b>	<b>58.99</b>	<b>11501.9</b>	<b>17.03</b>	<b>6.23</b>	<b>1.73</b>	<b>167.88</b>	<b>197.7</b>

Table 11: Foods table for pregnant women

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice	400	1460.00	25.60	1.60	316.00	36.00	16.00	0.00	0.80	0.84	0.36	0.00	44.00
Pulse	58	197.78	7.02	0.99	40.25	27.84	6.67	16.82	1.10	0.28	0.17	0.00	20.76
Leafy Veg	145	110.20	5.95	1.60	12.33	380.05	13.34	9820.13	3.05	5.22	0.29	81.64	14.07
Others Vegetable	87	49.59	1.83	0.35	10.09	180.26	1.22	539.40	1.13	0.06	0.06	9.57	9.83
Sweet Potato/Potato	58	69.60	0.70	0.17	16.36	11.60	0.46	0.00	0.46	0.03	0.12	1.16	0.00
Fish/Meat/Egg	58	82.94	22.33	2.26	1.45	266.22	2.73	49.59	0.01	0.01	0.03	2.90	4.99
Oil	40	360.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fruit	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
Total	896	2364.61	64.07	47.32	404.18	917.67	41.12	10880.94	7.85	6.49	1.07	116.27	94.15

Table 12: Foods table for lactating mother

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Rice	430	1569.5	27.52	1.72	339.70	38.70	17.20	0.00	0.86	0.90	0.39	0.00	47.30
Pulse	87	296.67	10.53	1.48	60.38	41.76	10.01	25.23	1.65	0.43	0.25	0.00	31.15
Leafy Veg	145	110.20	5.95	1.60	12.33	380.05	13.34	9820.13	3.05	5.22	0.29	81.64	14.07
Others Vegetable	87	49.59	1.83	0.35	10.09	180.26	1.22	539.40	1.13	0.06	0.06	9.57	9.83
Sweet Potato/Potato	58	69.60	0.70	0.17	16.36	11.60	0.46	0.00	0.46	0.03	0.12	1.16	0.00
Fish/Meat/Egg	58	82.94	22.33	2.26	1.45	266.22	2.73	49.59	0.01	0.01	0.03	2.90	4.99
Oil	40	360.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fruit	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
Total	955	2573.0	69.50	47.93	448.00	934.29	45.65	10889.35	8.46	6.70	1.18	116.27	107.83

Table 13: Foods table for weight decrease

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti Two Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Egg	40	62.40	7.04	3.72	0.20	2.20	0.60	300.80	0.00	0.02	0.05	0.00	31.68
Vegetable 0.5 Cup (Cooked)	60	38.40	1.74	0.42	6.30	136.62	2.58	1750.20	0.96	0.84	0.07	16.80	6.78
Fruit (Tok)	40	21.31	0.53	0.07	4.72	8.47	0.53	318.18	2.36	0.03	0.02	31.71	0.00
<b>11 Am Biscuit 1 Piece</b>	7	24.78	0.53	0.01	5.64	1.61	0.46	0.00	0.02	0.01	0.01	0.00	0.00
Apple 1	40	34.80	1.04	0.08	7.52	15.20	0.24	0.00	1.16	0.12	0.01	3.60	0.00
<b>Noon</b> Bhat 2 Cup	180	219.60	3.78	0.18	47.34	5.40	2.34	0.00	0.18	0.18	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Leafy Vegetable 0.5 Cup	60	38.40	1.74	0.42	6.30	136.62	2.58	1750.20	0.96	0.84	0.07	16.80	6.78
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 2 Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Chicken 1 Piece	30	51.90	3.99	3.99	0.00	18.00	0.63	502.20	0.00	0.03	0.12	0.00	2.04
Vegetable 1 Cup (Cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	13.56
Dhal (0.5 Cup Medium Ghono)	8	27.52	1.88	0.14	4.67	6.77	0.56	7.55	0.14	0.04	0.03	0.01	7.95
Oil*	14	126.00	0.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>924</b>	<b>1199.8</b>	<b>53.62</b>	<b>31.86</b>	<b>171.03</b>	<b>926.15</b>	<b>28.26</b>	<b>8660.79</b>	<b>9.95</b>	<b>4.30</b>	<b>1.04</b>	<b>108.78</b>	<b>138.36</b>

Table 14: Foods table for weight increase

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Vegetable 1.5 Cup (Cooked)	180	115.20	5.22	1.26	18.90	409.86	7.74	5250.60	2.88	2.52	0.20	50.40	20.34
<b>Fruit</b>	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
Egg	64	99.84	11.26	5.95	0.32	3.52	0.96	481.28	0.00	0.04	0.08	0.00	50.69
<b>11 Am Biscuit 3 Piece</b>	21	74.34	1.58	0.02	16.93	4.83	1.39	0.00	0.06	0.04	0.03	0.00	0.00
<b>Fruit</b>	50	34.50	0.65	0.35	7.70	15.70	0.70	455.00	1.30	0.04	0.05	21.00	0.50
<b>Noon</b> Bhat 6 Cup	540	658.80	11.34	0.54	142.02	16.20	7.02	0.00	0.54	0.54	0.00	0.00	0.00
Fish 2 Piece	60	85.80	25.62	2.16	1.92	347.76	3.06	27.60	0.00	0.01	0.01	3.00	0.00
Dhal (3 Cup Medium Ghono)	45	154.80	10.58	0.81	26.28	38.07	3.15	42.48	0.77	0.22	0.15	0.05	44.73
Leafy Vegetable 0.5 Cup (Cooked)	60	38.40	1.74	0.42	6.30	136.62	2.58	1750.20	0.96	0.84	0.07	16.80	6.78
Vegetable 1.5 Cup (Cooked)	180	115.20	5.22	1.26	18.90	409.86	7.74	5250.60	2.88	2.52	0.20	50.40	20.34
<b>Afternoon</b> Milk 1 Glass	240	160.80	7.68	9.84	10.56	312.00	0.48	40.80	0.00	0.12	0.46	4.80	20.40
<b>Night</b> Bhat 2.5 Cup	225	274.50	4.73	0.23	59.18	6.75	2.93	0.00	0.23	0.23	0.00	0.00	0.00
Chicken 1 Piece	60	103.80	7.98	7.98	0.00	36.00	1.26	1004.40	0.00	0.06	0.24	0.00	4.08
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable 1 Cup (Cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	13.56
Oil	58	522.00	0.00	58.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>2133</b>	<b>3000.4</b>	<b>116.77</b>	<b>92.05</b>	<b>417.32</b>	<b>2100.99</b>	<b>58.96</b>	<b>18316.68</b>	<b>14.84</b>	<b>9.48</b>	<b>2.04</b>	<b>201.0</b>	<b>247.7</b>

Table 15: Food table for old age

Food Items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti Two Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	0.00
Egg	40	62.40	7.04	3.72	0.20	2.20	0.60	300.80	0.00	0.02	0.05	0.00	0.00
Vegetable 1 Cup (Cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	0.00
Fruit (Tok)	40	21.31	0.53	0.07	4.72	8.47	0.53	318.18	2.36	0.03	0.02	31.71	0.00
<b>11 Am Biscuit 2 Piece</b>	14	49.56	1.05	0.01	11.28	3.22	0.92	0.00	0.04	0.03	0.02	0.00	0.00
Milk 1 Glass Fatless	240	69.60	6.00	0.24	11.04	288.00	0.48	0.00	0.29	0.19	14.4	0.00	0.00
<b>Noon</b> Bhat 2 Cup	180	219.60	3.78	0.18	47.34	5.40	2.34	0.00	0.18	0.18	0.00	0.00	0.00
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	0.00
Vegetable 1 Cup (Cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	0.00
Leafy Vegetable 0.5 Cup	60	38.40	1.74	0.42	6.30	136.62	2.58	1750.20	0.96	0.84	0.07	16.80	6.78
<b>Afternoon Biscuit 2 Piece</b>	14	49.56	1.05	0.01	11.28	3.22	0.92	0.00	0.04	0.03	0.02	0.00	0.00
Fruit (Sweet)	50	24.55	0.58	0.38	5.27	14.77	0.55	251.64	0.34	0.07	0.05	22.05	0.00
<b>Night</b> Bhat 2 Cup	180	219.60	3.78	0.18	47.34	5.40	2.34	0.00	0.18	0.18	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	0.00
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	0.00
Vegetable 1 Cup (Cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	0.00
Milk 1 Cup (Fatless)	120	34.80	3.00	0.12	5.52	144.00	0.24	0.00	0.14	0.10	7.20	0.00	0.00
Oil*	25	225.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1473	1571.7	71.06	36.40	234.80	1659.6	36.46	13218.1	11.40	7.06	22.5	173.5	6.78

Table 16: Costly food for adult

Food Items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Mihi Rice	232	846.80	14.85	0.93	183.28	20.88	9.28	0.00	0.46	0.49	0.21	0.00	25.52
Bread/Biscuit	116	522.00	7.42	17.63	83.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Meat	58	80.62	14.33	2.67	0.06	18.50	2.03	81.20	0.00	0.04	0.12	1.16	18.79
Big Fish	58	66.70	11.60	1.16	2.90	52.20	1.16	0.00	0.00	0.00	0.00	6.96	0.00
Egg	50	78.00	8.80	4.65	0.25	2.75	0.75	376.00	0.00	0.03	0.07	0.00	39.60
Fruit (Banana,Orange,Apple,Mango)	100	66.00	1.00	1.00	14.00	26.00	3.00	77.00	1.00	0.00	0.00	5.00	0.00
Milk	250	167.50	8.00	10.25	11.00	325.00	0.50	42.50	0.00	0.13	0.48	5.00	21.25
Butter	25	182.25	0.00	20.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sugar	58	230.84	0.00	0.00	57.65	6.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leafy Vegetable	58	44.08	2.38	0.64	4.93	152.02	5.34	3928.05	1.22	2.09	0.12	32.65	5.63
Vege.(Ladies Finger,Cowpea,Parwar,Peas)	116	134.56	8.73	0.67	23.37	72.50	4.50	718.62	3.60	0.28	0.12	3.48	69.60
oil/ghee	40	360.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1161	2779.4	77.11	99.84	380.85	676.81	26.55	5223.37	6.28	3.05	1.11	54.25	180.39

Table 17: Low costly food for adult

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Mota Chowl	232	846.80	14.85	0.93	183.28	20.88	9.28	0.00	0.46	0.49	0.21	0.00	25.52
Atta	232	791.12	28.07	3.94	161.01	111.36	26.68	67.28	4.41	1.14	0.67	0.00	83.06
Pulse,Bean's Seed,Peas	87	299.28	20.88	1.74	51.33	71.34	5.22	72.21	1.74	0.00	0.00	0.00	61.77
Small Fish	58	90.48	17.40	1.74	1.16	315.52	11.02	0.00	0.00	0.00	0.00	1.74	0.00
Sweet Potato	116	139.20	1.39	0.35	32.71	23.20	0.93	0.00	0.93	0.07	0.23	2.32	0.00
Sag (Kochu,Sagna,Palang,Pui,Lal Sag)	87	47.85	4.35	0.87	6.09	246.21	11.31	8691.30	0.87	0.00	0.00	75.69	35.67
Non Vegetable (Sim,Bittergourd,Derosh,Patal,Law)	87	39.40	1.98	0.39	7.01	58.29	1.35	416.61	1.39	0.07	0.11	27.47	30.96
Fruit (Guava,Amloki,Bor,Mango)	50	35.50	0.89	0.26	7.40	18.00	0.40	625.88	0.78	0.03	0.03	4.75	0.00
Oil	42	378.00	0.00	42.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sugar/Gur	30	113.4	0.60	0.00	28.20	45.60	1.80	16.80	0.00	0.00	0.00	0.00	0.00
Total	1021	2781.03	90.41	52.22	478.19	910.40	67.99	9890.07	10.58	1.79	1.25	111.97	236.98



Table 18: Food table 1 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti Two Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Egg	29	45.24	5.10	2.70	0.15	1.60	0.44	218.08	0.00	0.02	0.04	0.00	22.97
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Morning 11 A.M</b> Muri/Biscuit	15	53.10	1.13	0.02	12.09	3.45	0.99	0.00	0.05	0.03	0.02	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 1.5 Cup	180	219.60	3.78	0.18	47.34	5.40	2.34	0.00	0.18	0.18	0.00	0.00	0.00
Fish/Meat I Piece (Small)	25	35.25	8.43	1.00	0.41	76.44	1.08	23.25	0.00	0.01	0.03	0.88	4.05
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable:Group A As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable: Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 1 Piece	30	69.60	2.40	0.30	14.10	9.90	2.40	6.00	0.30	0.09	0.06	0.00	7.20
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	12	108.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	751	999.99	40.98	24.33	153.89	475.84	23.36	7043.19	6.34	0.83	0.65	117.95	121.94

Table 19: Food table 2 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti Two Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Egg	30	46.80	5.28	2.79	0.15	1.65	0.45	225.60	0.00	0.02	0.04	0.00	23.76
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	45	43.65	0.50	0.14	10.13	12.29	0.81	41.13	0.68	0.09	0.05	40.01	0.00
<b>11 Am Muri/Biscuit</b>	25	88.50	1.88	0.03	20.15	5.75	1.65	0.00	0.08	0.05	0.03	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 2 Cup	180	219.60	3.78	0.18	47.34	5.40	2.34	0.00	0.18	0.18	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable: Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 2 Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	20	180.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>820</b>	<b>1200.15</b>	<b>46.16</b>	<b>32.98</b>	<b>179.51</b>	<b>507.48</b>	<b>26.92</b>	<b>7075.07</b>	<b>6.89</b>	<b>0.98</b>	<b>0.74</b>	<b>131.46</b>	<b>130.74</b>

Table 20: Food table 3 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti Two Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Egg	30	46.80	5.28	2.79	0.15	1.65	0.45	225.60	0.00	0.02	0.04	0.00	23.76
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	42	40.74	0.46	0.13	9.45	11.47	0.76	38.39	0.63	0.08	0.04	37.34	0.00
<b>11 Am Muri/Biscuit</b>	30	106.20	2.25	0.03	24.18	6.90	1.98	0.00	0.09	0.06	0.04	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 3.5 Cup	300	366.00	6.30	0.30	78.90	9.00	3.90	0.00	0.30	0.30	0.00	0.00	0.00
Fish/Meat I Piece (Small)	25	35.25	8.43	1.00	0.41	76.44	1.08	23.25	0.00	0.01	0.03	0.88	4.05
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 2 Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Fish/Meat I Piece (Small)	20	28.20	6.74	0.80	0.33	61.15	0.86	18.60	0.00	0.01	0.02	0.70	3.24
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	22	198.00	0.00	22.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	959	1400.49	54.08	35.70	214.67	557.27	29.40	7086.28	6.98	1.11	0.76	129.31	133.17

Table 21: Food table 4 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 2 Piece	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Egg	30	46.80	5.28	2.79	0.15	1.65	0.45	225.60	0.00	0.02	0.04	0.00	23.76
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	30	106.20	2.25	0.03	24.18	6.90	1.98	0.00	0.09	0.06	0.04	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 3.5 Cup	300	366.00	6.30	0.30	78.90	9.00	3.90	0.00	0.30	0.30	0.00	0.00	0.00
Fish/Meat 2 Piece (Small)	50	70.50	16.85	2.00	0.83	152.88	2.15	46.50	0.00	0.02	0.05	1.75	8.10
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable: Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 3 Piece	90	208.80	7.20	0.90	42.30	29.70	7.20	18.00	0.90	0.27	0.18	0.00	21.60
Fish/Meat 1 Piece (Small)	20	28.20	6.74	0.80	0.33	61.15	0.86	18.60	0.00	0.01	0.02	0.70	3.24
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	27	243.00	0.00	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1032</b>	<b>1600.00</b>	<b>68.41</b>	<b>42.26</b>	<b>237.50</b>	<b>655.76</b>	<b>33.89</b>	<b>7127.86</b>	<b>7.51</b>	<b>1.28</b>	<b>0.89</b>	<b>128.43</b>	<b>159.33</b>

Table 22: Food table 5 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 4 Piece	120	278.40	9.60	1.20	56.40	39.60	9.60	24.00	1.20	0.36	0.24	0.00	28.80
Egg	34	53.04	5.98	3.16	0.17	1.87	0.51	255.68	0.00	0.02	0.04	0.00	26.93
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	30	106.20	2.25	0.03	24.18	6.90	1.98	0.00	0.09	0.06	0.04	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 4 Cup	360	439.20	7.56	0.36	94.68	10.80	4.68	0.00	0.36	0.36	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (1.5 Cup Medium Ghono)	25	86.00	5.88	0.45	14.60	21.15	1.75	23.60	0.43	0.12	0.08	0.03	24.85
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 3 Piece	90	208.80	7.20	0.90	42.30	29.70	7.20	18.00	0.90	0.27	0.18	0.00	21.60
Fish/Meat 1 Piece (Small)	20	28.20	6.74	0.80	0.33	61.15	0.86	18.60	0.00	0.01	0.02	0.70	3.24
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	30	270.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1134	1800.24	67.25	45.40	278.25	612.20	38.32	7146.62	8.08	1.49	0.98	127.72	168.69

Table 23: Food table 6 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 4 Piece	120	278.40	9.60	1.20	56.40	39.60	9.60	24.00	1.20	0.36	0.24	0.00	28.80
Egg	35	54.60	6.16	3.26	0.18	1.93	0.53	263.20	0.00	0.02	0.05	0.00	27.72
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	30	106.20	2.25	0.03	24.18	6.90	1.98	0.00	0.09	0.06	0.04	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 4.1/3 Cup	400	488.00	8.40	0.40	105.20	12.00	5.20	0.00	0.40	0.40	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (1.5 Cup Medium Ghono)	25	86.00	5.88	0.45	14.60	21.15	1.75	23.60	0.43	0.12	0.08	0.03	24.85
Vegetable: Group A (Raw) As Wish	40	16.80	0.80	0.40	2.80	37.20	2.00	1662.80	0.80	0.00	0.00	15.60	6.00
Vegetable: Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (1 Cup Medium Ghono)	15	51.60	3.53	0.27	8.76	12.69	1.05	14.16	0.26	0.07	0.05	0.02	14.91
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	30	270.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1235</b>	<b>1999.70</b>	<b>76.24</b>	<b>46.44</b>	<b>316.44</b>	<b>654.53</b>	<b>43.59</b>	<b>6759.74</b>	<b>8.52</b>	<b>1.71</b>	<b>1.11</b>	<b>124.17</b>	<b>184.00</b>

Table 24: Food table 7 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 4 Piece	120	278.40	9.60	1.20	56.40	39.60	9.60	24.00	1.20	0.36	0.24	0.00	28.80
Egg	40	62.40	7.04	3.72	0.20	2.20	0.60	300.80	0.00	0.02	0.05	0.00	31.68
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	30	106.20	2.25	0.03	24.18	6.90	1.98	0.00	0.09	0.06	0.04	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 5 Cup	450	549.00	9.45	0.45	118.35	13.50	5.85	0.00	0.45	0.45	0.00	0.00	0.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	40	16.80	0.80	0.40	2.80	37.20	2.00	1662.80	0.80	0.00	0.00	15.60	6.00
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	37	333.00	0.00	37.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1317	2200.30	82.87	54.31	341.29	673.22	45.71	6816.22	8.91	1.86	1.18	124.19	207.84

Table 25: Food table 8 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Egg	40	62.40	7.04	3.72	0.20	2.20	0.60	300.80	0.00	0.02	0.05	0.00	31.68
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	30	106.20	2.25	0.03	24.18	6.90	1.98	0.00	0.09	0.06	0.04	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 5.5 Cup	500	610.00	10.50	0.50	131.50	15.00	6.50	0.00	0.50	0.50	0.00	0.00	0.00
Fish/Meat 2 Piece (Small)	60	84.60	20.22	2.40	0.99	183.45	2.58	55.80	0.00	0.02	0.06	2.10	9.72
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	40	16.80	0.80	0.40	2.80	37.20	2.00	1662.80	0.80	0.00	0.00	15.60	6.00
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Fish/Meat 1 Piece (Small)	30	42.30	10.11	1.20	0.50	91.73	1.29	27.90	0.00	0.01	0.03	1.05	4.86
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	40	360.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1430</b>	<b>2400.20</b>	<b>96.43</b>	<b>58.86</b>	<b>369.04</b>	<b>776.35</b>	<b>50.05</b>	<b>6850.12</b>	<b>9.26</b>	<b>2.01</b>	<b>1.27</b>	<b>125.24</b>	<b>219.90</b>

Table 26: Food table 9 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Egg	40	62.40	7.04	3.72	0.20	2.20	0.60	300.80	0.00	0.02	0.05	0.00	31.68
Vegetable: Group A (Raw)	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	30	106.20	2.25	0.03	24.18	6.90	1.98	0.00	0.09	0.06	0.04	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 6 Cup	540	658.80	11.34	0.54	142.02	16.20	7.02	0.00	0.54	0.54	0.00	0.00	0.00
Fish/Meat 2 Piece (Small)	60	84.60	20.22	2.40	0.99	183.45	2.58	55.80	0.00	0.02	0.06	2.10	9.72
Dhal (2.5 Cup Medium Ghono)	45	154.80	10.58	0.81	26.28	38.07	3.15	42.48	0.77	0.22	0.15	0.05	44.73
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
<b>Night</b> Atar Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Fish/Meat 1 Piece (Medium)	34	47.94	11.46	1.36	0.56	103.96	1.46	31.62	0.00	0.01	0.03	1.19	5.51
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	50	450.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		2600.44	102.3	69.43	389.08	811.77	52.29	7283.70	9.76	2.12	1.33	129.30	236.96

Table 27: Food table 10 for diabetic person

Food items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Egg	40	62.40	7.04	3.72	0.20	2.20	0.60	300.80	0.00	0.02	0.05	0.00	31.68
Vegetable: Group A (Raw)	56	23.52	1.12	0.56	3.92	52.08	2.80	2327.92	1.12	0.00	0.00	21.84	8.40
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	60	212.40	4.50	0.06	48.36	13.80	3.96	0.00	0.18	0.13	0.07	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 6 Cup	540	658.80	11.34	0.54	142.02	16.20	7.02	0.00	0.54	0.54	0.00	0.00	0.00
Fish/Meat 2 Piece (Small)	60	84.60	20.22	2.40	0.99	183.45	2.58	55.80	0.00	0.02	0.06	2.10	9.72
Dhal (2.5 Cup Medium Ghono)	45	154.80	10.58	0.81	26.28	38.07	3.15	42.48	0.77	0.22	0.15	0.05	44.73
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable: Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	150	100.50	4.80	6.15	6.60	195.00	0.30	25.50	0.00	0.08	0.29	3.00	12.75
<b>Night</b> Atar Ruti 5 Piece	180	417.60	14.40	1.80	84.60	59.40	14.40	36.00	1.80	0.54	0.36	0.00	43.20
Fish/Meat 1 Piece (Medium)	35	49.35	11.80	1.40	0.58	107.01	1.51	32.55	0.00	0.01	0.04	1.23	5.67
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	50	450.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1606</b>	<b>2800.27</b>	<b>108.4</b>	<b>71.09</b>	<b>429.12</b>	<b>876.20</b>	<b>57.08</b>	<b>7545.15</b>	<b>10.27</b>	<b>2.29</b>	<b>1.48</b>	<b>132.27</b>	<b>247.77</b>

Table 28: Food table 10 for diabetic person

Food Items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
<b>(Morning)</b> Ruti 5 Piece	150	348.00	12.00	1.50	70.50	49.50	12.00	30.00	1.50	0.45	0.30	0.00	36.00
Egg	40	62.40	7.04	3.72	0.20	2.20	0.60	300.80	0.00	0.02	0.05	0.00	31.68
Vegetable: Group A (Raw)	56	23.52	1.12	0.56	3.92	52.08	2.80	2327.92	1.12	0.00	0.00	21.84	8.40
Fruit: Group A	40	38.80	0.44	0.12	9.00	10.92	0.72	36.56	0.60	0.08	0.04	35.56	0.00
<b>11 Am Muri/Biscuit</b>	60	212.40	4.50	0.06	48.36	13.80	3.96	0.00	0.18	0.13	0.07	0.00	0.00
Fruit: Group B (Any One)	30	29.10	0.33	0.09	6.75	8.19	0.54	27.42	0.45	0.06	0.03	26.67	0.00
<b>Noon</b> Bhat 6 Cup	540	658.80	11.34	0.54	142.02	16.20	7.02	0.00	0.54	0.54	0.00	0.00	0.00
Fish/Meat 2 Piece (Small)	60	84.60	20.22	2.40	0.99	183.45	2.58	55.80	0.00	0.02	0.06	2.10	9.72
Dhal (2.5 Cup Medium Ghono)	45	154.80	10.58	0.81	26.28	38.07	3.15	42.48	0.77	0.22	0.15	0.05	44.73
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Vegetable:Group B (Any One)	40	25.20	0.80	0.40	4.80	22.00	0.40	444.80	0.80	0.00	0.00	2.80	10.80
<b>Afternoon</b> Milk 1 Cup	150	100.50	4.80	6.15	6.60	195.00	0.30	25.50	0.00	0.08	0.29	3.00	12.75
<b>Night</b> Atar Ruti 5 Piece	180	417.60	14.40	1.80	84.60	59.40	14.40	36.00	1.80	0.54	0.36	0.00	43.20
Fish/Meat 1 Piece (Medium)	35	49.35	11.80	1.40	0.58	107.01	1.51	32.55	0.00	0.01	0.04	1.23	5.67
Dhal (2 Cup Medium Ghono)	30	103.20	7.05	0.54	17.52	25.38	2.10	28.32	0.51	0.14	0.10	0.03	29.82
Vegetable: Group A (Raw) As Wish	50	21.00	1.00	0.50	3.50	46.50	2.50	2078.50	1.00	0.00	0.00	19.50	7.50
Oil	50	450.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1606</b>	<b>2800.27</b>	<b>108.4</b>	<b>71.09</b>	<b>429.12</b>	<b>876.20</b>	<b>57.08</b>	<b>7545.15</b>	<b>10.27</b>	<b>2.29</b>	<b>1.48</b>	<b>132.27</b>	<b>247.77</b>

Table 29: Food table for hart disease

Food Items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
Ruti/Bread	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Vegetable (Cooked)	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	13.56
Oil	5	45.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dhal/White Part Of Egg	60	69.00	4.98	0.18	11.88	14.40	1.32	31.92	0.18	0.12	0.06	0.00	17.58
Tea (Sugar,Milk)	10	44.70	1.29	1.34	6.87	3.10	0.03	0.00	0.00	0.02	0.07	0.20	0.00
Fruit (Orange/Guava/Apple)	50	25.00	1.00	0.00	5.50	11.50	1.50	783.50	0.50	0.00	0.00	5.00	0.00
Before Noon (Biscuit)	10	28.90	0.47	1.66	3.04	11.50	0.35	288.00	1.15	0.00	0.00	0.25	0.00
<b>Noon</b> (Bhat)	225	274.50	4.73	0.23	59.18	6.75	2.93	0.00	0.23	0.23	0.00	0.00	0.00
Leafy Veg (Cooked)	60	28.20	1.80	0.00	4.80	16.20	0.60	390.00	0.00	0.00	0.00	3.00	9.00
Salad	60	13.20	0.96	0.06	2.10	8.40	0.90	0.00	0.24	0.10	0.01	3.00	8.82
Fish/Chicken	40	56.40	13.48	1.60	0.66	122.30	1.72	37.20	0.00	0.02	0.04	1.40	6.48
Mug Dhal	60	69.00	4.98	0.18	11.88	14.40	1.32	31.92	0.18	0.12	0.06	0.00	17.58
Oil	10	90.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Night</b> (Bread/Ruti)	60	139.20	4.80	0.60	28.20	19.80	4.80	12.00	0.60	0.18	0.12	0.00	14.40
Vegetable	60	38.40	1.74	0.42	6.30	136.62	2.58	1750.20	0.96	0.84	0.07	16.80	6.78
Salad	60	13.20	0.96	0.06	2.10	8.40	0.90	0.00	0.24	0.10	0.01	3.00	8.82
Fish/Chicken	40	56.40	13.48	1.60	0.66	122.30	1.72	37.20	0.00	0.02	0.04	1.40	6.48
Oil	7	63.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Before Bed (Milk)	120	80.40	3.84	4.92	5.28	156.00	0.24	20.40	0.00	0.06	0.23	2.40	10.20
Sugar With Milk	12	47.76	0.00	0.00	11.93	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1129</b>	<b>1398.26</b>	<b>66.79</b>	<b>36.29</b>	<b>201.17</b>	<b>946.15</b>	<b>30.87</b>	<b>6894.74</b>	<b>6.80</b>	<b>3.65</b>	<b>0.96</b>	<b>70.05</b>	<b>134.10</b>

Table 30: Food after batter condition of hart disease

Food Items	Weight gm.	Energy Kcal.	Protein gm.	Fat gm.	CHO gm.	Calcium mg.	Iron mg.	Carotene µg.	Fibre gm.	Vit. B <sub>1</sub> mg.	Vit. B <sub>2</sub> mg.	Vit. C mg.	Folic acid µg.
tea milk+sugar=10 g (morning)	10	44.70	1.29	1.34	6.87	3.10	0.03	0.00	0.00	0.02	0.07	0.20	0.00
milk fat less 1 glass	240	69.60	6.00	0.24	11.04	288.00	0.48	0.00	0.29	0.19	14.4	0.00	0.00
riti 1	30	69.60	2.40	0.30	14.10	9.90	2.40	6.00	0.30	0.09	0.06	0.00	7.20
orange or guava	50	24.00	0.90	0.05	4.95	10.00	0.25	2350.00	0.10	0.06	0.08	10.50	0.00
<b>noon</b> vegetable sup 1 cup	283	119.71	5.94	1.98	19.81	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
bhat 1 cup	90	109.80	1.89	0.09	23.67	2.70	1.17	0.00	0.09	0.09	0.00	0.00	0.00
dhal 1 cup	60	69.00	4.98	0.18	11.88	14.40	1.32	31.92	0.18	0.12	0.06	0.00	17.58
curds 1 cup	120	72.00	3.72	4.80	3.60	178.80	0.24	0.00	0.00	0.06	0.19	1.20	15.00
<b>after noon</b> tea 1 cup (milk+sugar=10)	10	44.70	1.29	1.34	6.87	3.10	0.03	0.00	0.00	0.02	0.07	0.20	0.00
night bhat 1 cup	90	109.80	1.89	0.09	23.67	2.70	1.17	0.00	0.09	0.09	0.00	0.00	0.00
vegetable 1 cup	120	76.80	3.48	0.84	12.60	273.24	5.16	3500.40	1.92	1.68	0.13	33.60	13.56
dhal 0.5 cup	30	34.50	2.49	0.09	5.94	7.20	0.66	15.96	0.09	0.06	0.03	0.00	8.79
banana	50	25.00	0.25	0.50	4.75	5.50	0.60	0.00	0.50	0.00	0.02	5.50	0.00
<b>Total</b>	<b>1183</b>	<b>869.21</b>	<b>36.52</b>	<b>11.84</b>	<b>149.75</b>	<b>798.64</b>	<b>13.59</b>	<b>5904.28</b>	<b>3.56</b>	<b>2.48</b>	<b>15.1</b>	<b>51.20</b>	<b>62.13</b>