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# UNIT 1 PLANNING AND EVALUATION OF BALANCED DIET

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## 1.0 OBJECTIVES

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After going through this unit, you would be able to:

- identify the seven steps in planning the balanced diets;
- use food exchanges in planning balanced diets by making a food plan;
- distribute the food exchanges in a food plan in various meals;
- plan suitable meals by selecting foods and making menu's of your choice; and
- evaluate diets/meals/snacks for adequacy/acceptability.

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## 1.1 INTRODUCTION

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We hope that by now you are familiar with the basic principles of planning balanced diets (as discussed in Block 5, Unit 2 of BNS-102). If not, read them, it will help you to do this Unit.

This Unit describes the **principles of planning adequate balanced diets in seven steps** which you have learnt. Now, you will learn to put these steps for actually planning the diets.

Remember that these **seven steps are the blueprint for planning balanced diets for individuals of any age group**. By concentrating on these you will acquire the skills and knowledge for doing activities related to this section. Practical key points related to each step are given in bold print. You should remember them. Activities (if done side by side) will help you in understanding practical intricacies of each step. The concept of planning is simplified by explaining **food units or exchanges. Learning of food exchanges of various foodstuffs and the energy and protein supplied by them is also essential**. You will need them for doing almost all activities related to this section.

You will notice that initially you will take more time in planning. You may think that it is quite a laborious task. But with practice, you will soon take, just 15 to 20 minutes to plan a balanced diet for an individual. Do practice enough to gain the expertise. You will gradually discover the fun in planning balanced diets.

Another aspect discussed here is **evaluation**. You know that no activity is complete, unless **it is checked for accomplishment of its objectives**. So evaluation of diets is also important for you to know. It is explained through key points, examples and activities. Besides planning the diet and evaluating it, a nurse also plays a very important role in the nutritional care of the community both in the hospital and at home. Some of her roles are enumerated below:

- Liaisoning and communicating between the doctor, dietitian, family and the individual;
- Understanding the importance of nutritional assessment and assisting the dietitian for the same;
- Completing the necessary record with information on diagnosis of the individual, medication, laboratory information and complaints of appetite/diet;
- Implementing the patient care plans and fulfilling any specific needs through constant education;
- Preparing patient’s environment for the food and assisting in taking the food if required;
- Giving emotional strength to the individual and understanding the psychological and socio-economic problems; and
- Preparing individuals for acceptable nutritious diet at home or rehabilitation.

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## 1.2 PLANNING OF A BALANCED DIET

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You are already familiar with the steps in planning balanced diets.

You may recall BNS-102, Block 5, Unit 2 and write them down in the space provided here?

- 1) .....
- 2) .....
- 3) .....
- 4) .....
- 5) .....
- 6) .....
- 7) .....

Based on these steps, let us learn to plan a balanced diet. We will start with Step 1.

### 1.2.1 Step 1: Identify the Individual

In Step 1 planning balanced diets starts with identifying the individuals i.e., knowing about their

- 1) Age .....
- 2) Sex .....
- 3) Socio-economic status .....
- 4) Activity level : Sedentary/moderate/heavy (only in case of adults)
- 5) Region (North/South/East/West) .....

### 1.2.2 Step 2: Consult Recommended Dietary Intakes (RDI’s) for Energy and Protein Depending upon the Sex, Age and Activity for Adults

After identifying the individual, the second step is to consult RDI’s for energy and protein. You are already familiar with RDI table which is given in Block 5, Unit 2 of BNS-102. It is

reproduced here for your ready reference (Table 1.1). The dietary reference values as recommended by WHO and UK and USA are presented in Appendix 1.

**Self Activity**

Use RDI table for finding energy and protein needs of all your family members:

Name of the individual	Age	Sex	Activity (Adults)	Energy (Kcals)	Protein (g)
1)					
2)					
3)					
4)					

You may inquire as to why we have consulted RDI's only for energy and protein and not for other nutrients?

This is because we assume that diets which are adequate in energy and protein are on the whole adequate in other nutrients as well. Of course, you have to take care to include sufficient amount of fruits and vegetables in order to ensure adequate availability of vitamins and minerals.

**1.2.3 Step 3: Select Food from all Three Food Groups**

You have already written the RDI's for all your family members. Now you will learn to select the right choice of foodstuffs to meet your nutrient needs. You know about the three basic food groups. These basic food groups help in selection of foodstuffs for planning balanced diets.

Let us look at the list of foodstuffs which are included in these **three basic food groups** (see Fig. 1.1).

**Self Activity**

Fill in the gaps here for the foodstuffs you know/are commonly available and eaten in your region.

**Energy**

Cereals: For example rice, .....

Roots and Tubers: Potato, .....

Sugar, jaggery: Honey .....

Fats and oils: Ghee, .....

**Body Building Groups**

Milk and milk products: For example paneer, .....

.....

Pulses: Rajma, .....

Flesh food: Chicken, .....

Table 1.1: Recommended Dietary Intakes for Indians

Group	Particulars	Body wt Kg	Net energy Kcal	Protein g	Fat g	Calcium mg	Iron mg	Vit A Retinol	µg/d B-carotene	Thiamine mg	Riboflavin mg	Niacin mg	Ascorbic acid mg	Folic acid µg	Vit B-12 µg					
Man	Sedentary work	60	2425	60	20	400	28	600	2400	1.2	1.4	16	40	100	1					
	Moderate work		2875							1.4	1.6	18								
	Heavy work		3800							1.6	1.9	21								
Woman	Sedentary work	50	1875	50	20	400	30	600	2400	0.9	1.1	12	40	100	1					
	Moderate work	2225	1.1							1.3	14									
	Heavy work	2925	1.2							1.5	16									
	Pregnant woman	50	+300	+15	30	1000	38	600	2400	+0.2	+0.2	+2	40	400	1					
Lactation	50	+550	+2.5	45	1000	30	950	3800	+0.3	+0.3	+4	80	150	1.5						
0-6 months																				
6-12 months	+440	+18																		
Infants	0-6 months	5.4	108/kg	2.05/kg		500		350	1200	55µg/kg	65µg/kg	710µg/kg	25	25	0.2					
	6-12 months	8.6	98/kg	1.65/kg						50µg/kg	60µg/kg	650µg/kg								
Children	1-3 years	12.2	1240	22	25	400	12	400	1600	0.6	0.7	8	40	30	0.2-1					
	4-6 years	10.0	1690	30			18	400		0.9	1.0	11		40						
	7-9 years	26.9	1950	41			26	600		1.0	1.2	13		60						
Boys	10-12 years	35.4	2190	54	22	600	34	600	2400	1.0	1.2	13	40	70	0.2-1.0					
Girls	10-12 years	31.5	1970	57			19	600								1.0	1.2	13		
Boys	13-15 years	47.8	2450	70			41	600								1.2	1.5	16		
Girls	13-15 years	46.7	2060	65	22	600	28	600	2400	1.0	1.2	14	40	100	0.2-1.0					
Boys	16-18 years	57.1	2640	78												50	600	1.3	1.6	17
Girls	16-18 years	49.6	2060	63												30	600	1.0	1.2	14

Source: Dietary Guidelines for Indians — A Manual; ICMR (1998)

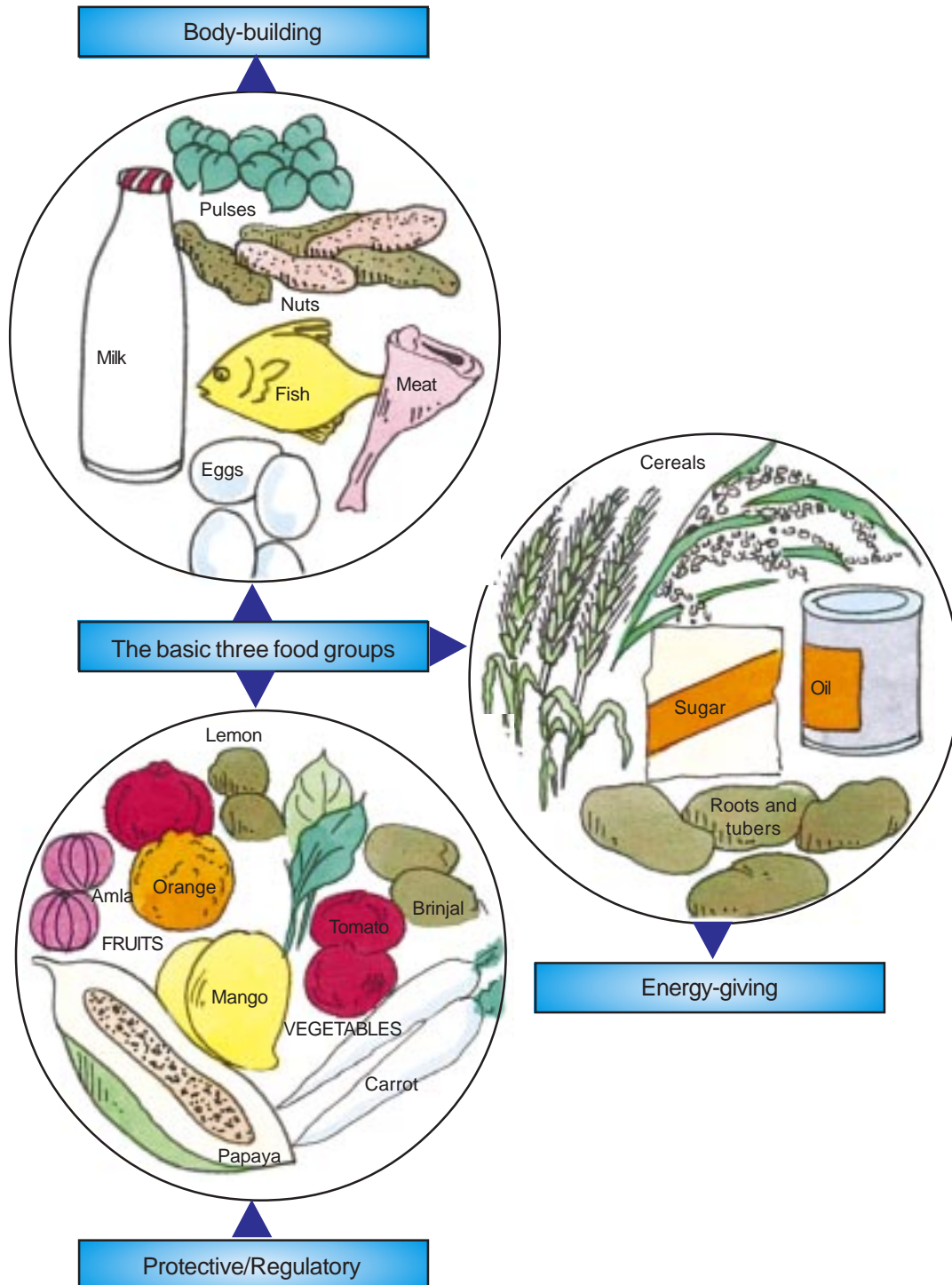
**Protective Group**

Leafy vegetables: For example spinach, .....

Other vegetables: cauliflower .....

Fruits : Banana, .....

You would notice that this list is vast. How can you select foodstuffs from this list?



**Fig 1.1: The three group classification of food**

There are certain key points which can make your task easier. Do read these three to four times, so that they remain in your memory.

### **Key Points**

The following guidelines will help you further in your choice of foodstuffs for a day's diet.

#### **A) *Guidelines Related to Nutritional Factors***

Select items preferably for each meal in a day from each food group for your family. The guidelines below will help you to choose more wisely for your one day plan.

##### *Energy Group*

- Essentially include the staple cereal that you take as the main source of energy. For example wheat base. In smaller quantities take other cereals also like rice, maize etc. Combination of cereals is better nutritionally than a single cereal.
- Include fat and oil in the days diet. Choice of fat would depend on your preference. Oils are a good selection. Too much ghee, butter, cream and other solid fats must be avoided. Why? Fats are important and a richest source of energy. That also make the meals tasty and satisfying.
- Roots and tubers also give you energy. Add them for variety.
- Sugar and jaggery also give energy.

##### *Body Building Group*

- Essentially include atleast a cup of milk. Other milk products can also be selected such as curds, cheese, khoya.
- If non vegetarian, add flesh foods (meat, fish, poultry, egg).
- Include pulses and soya products such as nutrinuggets which are a rich source of protein also. Nutrinuggets are easily available as chunks or fine form. These have double the quantity of proteins than pulses.

##### *Protective Foods*

Vegetables and fruits are a rich source of protective foods as they contain good quantity of minerals and vitamins which protect the body against disease. These foods also give colour and variety to your diet.

- If possible select any green leafy vegetable once a day in any meal. Even a mint or a coriander chutney consumed daily is a good habit.
- Select other vegetables like peas, pumpkin, carrots etc. depending on the availability and cost.
- Select atleast one fruit a day. If you cannot afford take lemon salads or even sprouted pulses.

#### **B) *Guidelines Related to Non-nutritional Factors***

One of the major factors which affect your selection of food is your economic condition. Table 1.2 gives few examples of foodstuffs selected by families of various income groups.

**Table 1.2: A Simple Guide on Food Selection for Different Income Groups**

Food Items	Low Income Group	Middle Income Group	High Income Group
Cereals	Use cheaper variety of wheat/rice, maize, bajra	Use cereals either rationed quality wheat/rice	Use good quality cereals (sharbati-wheat, basmati rice)
Pulses	Cheap mixed pulse	Can have wider variety of pulses (red gram, black gram, green gram etc.)	Can include wider variety of pulses (Rajamah, black gram, Moth beans, Soyabean etc.)
Milk	Use cheaper variety of milk (toned milk)	Can include good quality milk and milk products like curd, paneer etc.	Include good quality milk and milk-products- whole milk, curd, cheese (home made and processed), Khoya etc.
Vegetable/ Fruit	Include seasonal and locally available fruits and veg. only (amaranth leaves, bathua, pumpkin, brinjal, banana, papaya, guava etc.)	Can select wider locally available items. Seasonal/non-seasonal items can be included. Green veg., peas, beans, cabbage, apple, oranges etc.	Can include variety of fruits/veg. In or out of season, locally available or purchased from outside (salad leaves, fresh peas, beat root, carrots, apple, oranges, grapes, pomegranate, plums, peaches etc. Dry fruit, canned fruit.
Meat/Meat Products	Use eggs or cheaper cuts of meat occasionally	Use egg, meat, chicken, fish sometimes	Use eggs, meat, chicken, fish, ham, sausages, bacon etc.
Fats	Use cheaper variety of fat -(unrefined) mustard oil etc.	Cheap variety of refined oil, home-made butter, hydrogenated fat	Use variety of fats/oil, pure ghee, refined oil, low cholesterol butter, margarine.
Sugar	Use jaggery instead of sugar	Use sugar, jam	Use sugar, jam, jellies, marmalade, honey etc.
Miscellaneous	Home made chutney made of garlic, chilly, onion	Home made chutneys, pickles, papad	Variety of pickles, chutney, dressings, papads
Methods of Cooking	Adopt combining of foods and simple cooking processes like boiling, steaming pressure cooking. Process like germination, fermentation	Use boiling, pressure cooking, steaming, frying, baking occasionally	All processes particularly baking and roasting more often.

**Self Activity**

Following are groups of foodstuffs you consume in your diet . Write the specific names of food items that you would like to include in your daily diet, keeping the guidelines in your mind.

Cereal .....

Roots and tubers .....

Fat .....

- Milk and milk products .....
- Pulses .....
- Flesh food .....
- Leafy vegetables .....
- Other vegetables .....
- Fruits .....
- Give the reasons for your selection of:
- Energy foods .....
- .....
- .....
- Body building foods .....
- .....
- .....
- Protective foods .....
- .....
- .....

**1.2.4 Step 4: Decide the Total Amount of Each Foodstuff for Your Day’s Food Plan**

In the previous step, you have learnt how to identify/select foodstuffs from various food groups. Now you have to decide the total amount of each of these foodstuffs selected by you. The amounts should satisfy one’s hunger and taste, as well as meet the recommended dietary intakes. You can use the **concept of food exchanges here.**

What are food exchanges ? How are they used in planning balanced diets ?

Each food exchange is a group of food items of approximately a constant amount providing almost similar amount of energy, protein or other nutrients. You can understand it by looking at the table given below:

**Table 1.3: Comprehensive Food Exchange Table**

Exchange (Food Group)	No. of Exchanges	Amount (gm)	Energy content (Kcal)	Protein content (gm)
<b>Energy group</b>				
Cereals	1	20	70	2
Roots and tubers	1	60	70	2
Sugar and jaggery	1	5	20	—
Fats and Oils	1	5	45	—
<b>Body-building group</b>				
Milk and milk products	1	250 ml	170	8
Pulses	1	30	100	7
Flesh food	1	40-50	70	7
<b>Protective group</b>				
Green leafy vegetables and gourds	1	100	N*	N*
Other vegetables	1	100-150	40	2
Fruits	1	80-100	40	N*

\*Negligible

**Source:** Adapted from Comprehensive Exchange List developed by Department of Food and Nutrition, Lady Irwin College, New Delhi.



What do you notice in this table? The table gives details about various food categories (according to food groups). Columns 2 and 3 indicate No. of Exchanges and amount in grams per exchange for these food categories (like cereal, milk, pulses, vegetables etc.). Columns 4 and 5 give approximate energy and protein supplied by food exchange of each food category.

According to the food exchange table one exchange of cereal is 20g and it provides 70Kcal and 2g protein. The word cereal include various cereals like wheat, rice, jowar, bajra, etc. In other words one food exchange or 20g of any cereal say rice/wheat/jowar/ provide the same amount of energy (70 Kcal) and protein (2g). But if roots and tubers are consumed to provide the same amount of energy and proteins, you require more amount. This is because 60g of roots and tubers is equal to the same nutrient strength as 20 g of any cereal like rice or wheat. Study the table carefully and you will see a similar pattern for the food groups in body building and protective food groups.

You can plan your diets on the basis of number of exchanges of various foodstuffs say cereal, pulses, fats and oils, milk and milk products and so on. **The number of exchanges of various foodstuffs to be included in the diet of an individual depend upon many factors .**

Factors like age, sex, activity, physiological state, socio-economic, region and religion. Basically our diet consists of staple cereal taken with pulse along with vegetables, milk and some fruits. Fats are used in cooking and sugar is usually taken in our beverages, snacks or desserts. The major portion of our food is the cereal. The proportion of cereal pulse is generally 4:1 or 3:1. The quantity of cereal exchange for an adult can vary from 12-30 exchanges depending on the age, sex and socio-economic level. For a school going child the range is nearly half of the adult.

Similarly the other food exchanges also vary. The following guidelines will help you to decide the exchange of the other food groups.

Children need more of body building foods, and hence need atleast 2 exchanges of milk, while adults can make do even with one or half exchange. If vegetarian atleast one exchange of pulse and if non-vegetarian one exchange of flesh foods could be given. Adults could take more than one exchange of pulse (vegetarian) and atleast one exchange or more of flesh foods if non-vegetarian.

Children need more Vitamin A and Calcium. This could be supplied from green leafy vegetables and intake of other vegetables and fruits. Atleast one exchange of each is needed.

The food exchanges to be given are flexible and can fulfil the nutritional needs of an individual within the socio-economic, region and religious needs. Individuals' likes/dislikes can also be taken into account. You will learn more about the specific needs of adults, pregnant, lactating women, children, and infants later. This chapter will give you a rough idea of how to plan your meals generally. When you are able to decide number of food exchanges for all the foodstuffs, you have selected, you get a **table known as food plan.**

For example given below is the food plan for Ramesh Chand, a college lecturer (Table 1.4). His RDI's for energy and protein are 2800 Kcal and 60 g protein.

**Table 1.4: Food Plan for Ramesh Chand**

Food exchange	Food exchanges (No.)	Energy (Kcal)	Protein (g)
Cereal	15	1050	30
Roots and tubers	1	70	2
Sugar and jaggery	7	140	—
Fat and oils	8	365	—
Pulses	2	200	—
Milk and milk products	2	370	—
Flesh foods	—	—	—
Green leafy vegetables	1	—	—
Other vegetables	2	80	—
Fruits	3	120	—
<b>Total</b>	—	<b>5</b>	—

There are two more columns in the food plan – energy (Kcal) and protein (g). It is essential to calculate the energy and protein values of the food plan table. This is to check whether it tallies with the RDI's or not.

Now you would want to know as to how you can check this?

Energy and protein values for these columns can be calculated with the help of food exchange table given earlier in Table 1.3.

According to this Food Exchange table one exchange of cereal provides 70 Kcal.

Therefore 15 exchange of cereal will provide  $15 \times 70 = 1050$  Kcal

Similarly one exchange of cereal provide 2 g of protein

Therefore 15 exchanges of cereals will provide  $2 \times 15 = 30$  g protein.

Similarly, you can calculate energy and protein values of other foodstuffs as well and fill the gaps given in the food plan. Calculate the total energy and protein values of the plan and tally them with the RDI's given in Table 1.1.

Does this food plan provide adequate energy and protein needed by Ramesh Chand.

Answer .....

**Note:** Deviation of 50 Kcal in energy, and 5-10 g protein from RDI's is acceptable. In cereal based diet the protein content may exceed the RDI.

You will not be able to reach at suitable food plan (which provides desired RDI's for energy and protein) at one go. You will have to make some mathematical adjustments till you reach at the right one.

**Key Points to Remember for Making a Food Plan**

- 1) Roughly estimate amount of milk, pulse, meat, vegetables and fruits a person requires and can afford.
- 2) Fill in calories and protein values provided by these foods.
- 3) The remaining calories can be provided by cereal, fat and sugar exchange.
- 4) If food plan provides more energy than the RDI, first decrease the fat, sugar and then cereal exchange. Do the reverse for increase in energy.
- 5) If your food plan provides more protein than RDI, decrease pulse, milk or meat exchange. However, minimum amount of these must be included. If less protein is provided the vice versa holds true.

You could get an idea of the food plans for different age groups and physiological states such as pregnancy and lactation in Tables 1.5 and 1.6. These food plans have been prepared for the middle income group.

**1.2.5 Step 5: Distribute the Total Amount of Foodstuff in Various Meals**

By arriving at a suitable food plan, we have reached at step 5 in meal planning. In a food plan, you get the amount of various foodstuffs to be consumed in a day. Now you will learn to distribute them in various meals. You may now ask as to how many meals does a person consume in a day?

The number of meals consumed by a person depend upon the age, occupation, habit, and income, the number of times you eat can range from 3 times a day to 6 times for a normal individual. So after finding details of number of meals consumed by a person in a day the following key points and guidelines can be used for distributing exchanges in various meals. Generally a low socio economic group may take only 2/3 meals a day with less variety in food. While a higher socio economic group could take 4-6 meals with more variety.





### Key Points for Distribution of Food Exchanges in a Meal

These key points apply for individuals of any age group that each of the three main meals contain food from all the three food groups. You can exempt tea and mid-morning snack from this rule. (Check in Table 1.5.)

- First divide cereals in lunch and dinner (approximately 1/3rd of the cereal in lunch and 1/3rd in dinner). Give rest in breakfast, mid-morning snacks and tea.
- Then divide body-building foods. Give at least one body building food in each main meal-either pulse or milk. You can give milk for breakfast and tea or in the form of curd or paneer for lunch and dinner. Pulse can be given during lunch time or dinner or in the form of besan for tea or mix-morning snacks. Children may not have tea. They have either milk or fruit juice at tea time.
- Give vegetables for lunch and dinner. Other vegetables can be given in the form of onion and tomato. (Season-in-oil) while cooking dal, or vegetable preparation or even as salads. Fillings of vegetables can be given as parathas (for breakfast) or tea time snacks (Samosa, Pakora).

This way the three food groups would be represented in each meal and therefore the nutrient intakes would be distributed well and the diet would be balanced. In the following table (Table 1.7) the exchanges have been distributed for Ramesh Chand.

Table 1.7: Distribution of Food Exchange for Ramesh Chand

Food group	Food Exchange	Exchanges for Day's meal					
		Break-fast	Mid Morning	Lunch	Tea	Dinner	Total Exchanges
Energy giving	Cereals	2	1	5	2	5	15
	Roots and Tubers	—	—	.1	—	—	1
	Sugar/Jaggery	2	2	—	3	—	7
	Fat and oils	2	1	2	1	2	8
Body building	Pulses	—	½	½	—	1	2
	Milk	1	¼	½	¼	—	2
	Flesh foods	—	—	—	—	—	—
Protective	Green leafy vegetables	—	—	1	—	—	1
	Other vegetables	—	—	1	—	1	2
	Fruits	2	-	-	-	1	3

In this way you can distribute the total amount of foodstuffs in any food plan. You can after some time do this step mentally for each meal.

### 1.2.6 Step 6: Decide the Menu

The next step in meal planning is to convert the food exchanges distributed in a meal into an attractive, appetizing and acceptable menu by including dishes that the family likes. This list of dishes to be served is called a menu.

What points should we keep in mind while deciding the menu?

- Include food from all **three food groups** in each meal. Only the midmorning and tea snack could be exempted from this rule.

- Keep **age** factor in mind; because the amounts ( portion size ) to be fed depends on age and also the likes and dislikes of foods during various stages of life.
- Include **variety** to avoid monotony. Do not repeat same kinds of foods in each meal except in a low socio economic group because money and time factor are some limitations.
- Include combination of crisp (like pappad, salad) and soft foods (curd, milk, pulse) so as to bring **variety in texture**.
- Select dishes in each meal so that when served they look attractive colourwise. For example green moong dal, green leafy vegetable and dhania chutney can look unappetizing and monotonous in colour. But if you give green moong dal, tossed potatoes bhaji (yellow) with tomato salad (red), the combination of colours makes the food more attractive.
- **Combine bland foods** with more strongly **flavoured foods**.
- **Use seasonal** fruits and vegetables.

Your food distribution table gives amounts of various foodstuff in grams (see Table 1.11). However, you cook and serve meals in household measures like katori, cup or plate.

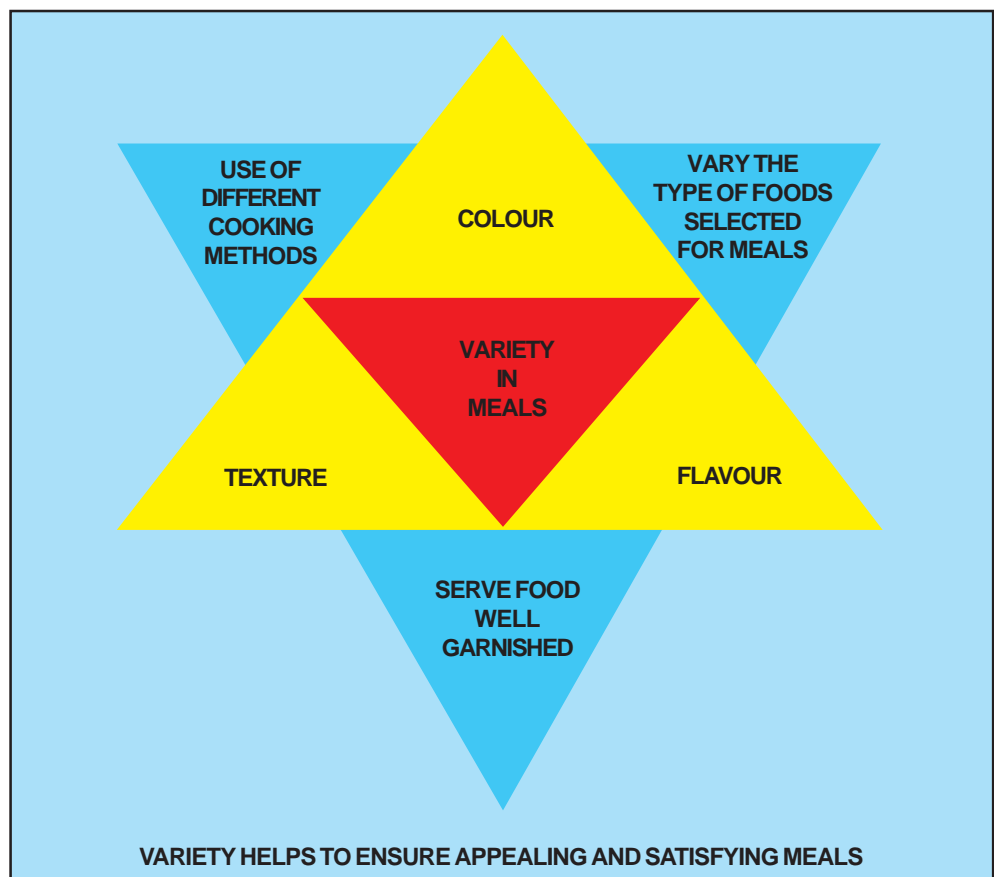


Fig. 1.2: Variety in Meals

### 1.2.7 Step 7: Check the Day's Diet for Inclusion of all Food Groups and the Quantities Provided in the Food Plan

This you could do by roughly seeing the ingredients of each recipe and approximately the amount of food exchange it contributes in the whole days diet and match it with the food plan.

Remember the important points and guidelines for planning meals. Go through all the steps one by one and fill in the following:

#### Self Activity

Plan suitable one day meal plan for yourself which is attractive, appetizing and acceptable to you keeping in mind your age, sex, activity, region and socio-economic factors. Please fill up your specific details in Step 1 below.

**Step 1: Identification of the individual**

- 1) Age .....
- 2) Sex .....
- 3) Socio-economic status .....
- 4) Activity Level – sedentary/moderate/heavy (Tick mark)
- 5) Region – North/South/East/West (Tick mark)

**Step 2: Consult RDI for the individual identified**

Indicate the energy and the protein required referring to the Table 1.1.

Name of individual	Energy (Kcal)	Protein (gm)

**Step 3: Select foods from all three food groups**

Fill up the following columns for the food stuffs that you could afford, and would like in the menu.

Energy group –

- Cereals : .....
- Fats and oils : .....
- Roots and tubers : .....
- Sugar and jaggery : .....

Body Building group –

- Milk and milk products : .....
- Pulses : .....
- Flesh foods : .....

Protective group –

- Leafy vegetables : .....
- Other vegetables : .....
- Fruits : .....

**Step 4: Decide the total amount of each foodstuffs for your day’s plan.**

While making a food plan, fill the following table for food exchanges, calories and proteins these foods provide (refer Table 1.4).

Food Exchange	Number of Food Exchanges	Energy (Kcal)	Protein (g)
Cereal			
Roots and tubers			
Sugar and jaggery			
Fats and oils			
Pulses			
Milk and milk products			
Flesh foods			
Green leafy vegetables			
Other vegetables			
Fruits			
<b>Total</b>			

Total the energy and protein and compare the same for the RDI you have filled up for yourself in Step 2.

Does your food plan meet the RDI? Yes/No. If no write in 5 lines what changes you will make in your exchanges so that your meal plan is adequate in RDI.

Indicate the number and types of various meals you take in a day. Write the same in the space below.

<b>Breakfast 1</b>	<b>Mid Morning 2</b>	<b>Lunch 3</b>	<b>Tea 4</b>	<b>Dinner 5</b>

**Step 5: Distribution of food exchanges in a meal**

Read the guidelines and try to distribute the exchanges in a meal keeping in mind the 3 food group principle.

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**Step 6: Decide the menu for each meal**

Keeping the food exchanges that you have selected for your meals. Now plan a suitable menu for yourself and write the same in the space below.

<b>Meals</b>	<b>Menu</b>
Breakfast  Mid Morning  Lunch  Tea  Dinner	



**Step 7: Check the day's diet for inclusion of all food groups and quantities provided in the food plan**

Answer the following questions.

- 1) How will you check the quality of your meals that you have planned?
- 2) How will you judge the quantitative adequacy of the lunch provided in relation to the exchanges given in the food plan?
- 3) What are the foods that you have included in the menu? Mention the same.

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### **1.3 EVALUATION OF A BALANCED DIET/MEAL / SNACK**

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Any diet, meal or snack can be evaluated for its nutritional adequacy and product acceptability.

#### **Nutritional Acceptability**

This can be judged from the qualitative and quantitative aspects. Qualitative aspect and a days diet or meal can be judged by the concept and the three food group representation. If it is a snack and you have to provide high calories and protein, the same can be judged nutrient wise. The quantity is related to the protein size (amount) to be given. This will depend on factors like the RDI which is based on the age, sex activity, physiological state etc. Thus if the diet/meal provides the three food groups and is given in correct portion, size or serving size it would be nutritionally acceptable.

#### **Product Acceptability**

You could assume a good product acceptability if the individual eats the food with happiness and interest and does not waste any food. If the product is not acceptable the individual will not be happy and interested and will waste the same. Product acceptability can be improved by choosing the right type of foods that are liked for a particular age group. For example children like sweets, milk shakes and ice creams. The same selection may not be liked by a middle aged adult man. Even after selecting wisely the food may not be prepared well. Therefore, appearance, colour, texture and taste of a product are also very important factors.

#### **Tips on How to Improve Nutritive Content and Product Acceptability**

Improve nutritive content

- 1) Thinly peel vegetables. Thick peels remove nutrients.
- 2) Wash vegetables whole and then cut. Cutting and then washing removes the water soluble nutrients like vitamins and minerals.
- 3) Use just enough water for cooking as is required.
- 4) Use of baking soda in cooking vegetables/pulses is harmful to the vitamins.
- 5) Use a pressure cooker as cooking time is less and it preserves the nutrients.
- 6) Frequent deep frying of foods should be avoided as it destroys nutrients.
- 7) Use combination of cereals, pulses and vegetables. This increases the nutritive contents.
- 8) Fermentation (used for idli and dhokla making) and sprouting of pulses increases the vitamin content of the food.

The above tips can preserve nutrients in foods. Food can be made more acceptable by :

- 1) Preparing foods that are enjoyed and liked by the individual.
- 2) Foods should have a pleasing appearance. The product should look good and appetizing. You can use garinshes.
- 3) Has the right texture. Soft, crisp etc.
- 4) Serve hot dishes hot and cold dishes cold or chilled depending on the season.

You can evaluate overall acceptability of a product by giving scores.

3 – Good product (no scope of improvement)

2 – Satisfactory (edible but there is some scope of improvement)

1 – Poor (inedible, needs a lot of improvement)

So a product that gets the highest scores is a good product while a product with the lowest scores is a poor product.

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## 1.4 METHODS OF COOKING AND COOKING PRACTICES

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Food plays an important role in our body. Retention of nutrients in food is mainly influenced by the various methods of cooking. It is therefore very crucial to know about the different methods of cooking and particularly the right technique of cooking. You may be familiar with most of the cooking methods. Prepare a list of cooking methods and tally your responses with the list of cooking methods presented in Table 1.8.

**Table 1.8: Cooking Methods**

Moist Heat	Dry Heat	Other Methods
i) Boiling	i) Roasting	i) Sauteing
ii) Simmering	ii) Grilling	ii) Frying
iii) Blanching	iii) Toasting	
iv) Steaming	iv) Baking	
v) Pressure Cooking		
vi) Poaching		
vii) Stewing		

Cooking usually requires heat. Based on the type of heat applied, the methods can be classified as either *Wet* or *Dry Cooking methods* as indicated in Table 1.8. Before cooking the food it is prepared for cooking. Figure 1.3 presents the preparation to cooking methods.

A detailed discussion on cooking methods is presented in section 1.4

**Boiling** : To cook in a liquid at the boiling point. The boiling point is the temperature at which the liquid is hot enough to bubble and steam. Few examples of cooking by boiling include cooking potatoes, rice and vegetables in water.

**Simmering** : To cook in a liquid at temperatures below the boiling point. Usually liquid is brought to a boil and the flame reduced. Normally, we use this method to cook gravy/curry items.

**Blanching** : To partially cook by dipping in boiling water for a few seconds to two minutes. We remove the skin of tomatoes and almonds by blanching.



Fig. 1.3: Pre-preparation to cooking methods

- Steaming** : To cook food inside a metal basket or another holder containing perforations (holes) over boiling water. We steam idlis, dhokla and idiappam.
- Pressure Cook** : To cook foods by steaming (heating) under high pressure. Increasing pressure increases the temperature at which water boils. This means water will boil at a higher temperature in a pressure cooker.
- Poaching** : To cook in hot liquid usually below boiling point taking care to retain shape. We poach eggs in hot water. We can also poach fish, fruits.
- Stewing** : To cook in a small amount of liquid in a covered container. We use this method for cooking meats, vegetables and dals etc.
- Roasting** : To cook food by placing it in direct contact with the heat source. Fat or oil is smeared on the food at intervals while it is roasted to help even cooking. The heat source may be live coals, an oven or tandoor. You must have eaten roast/tandoori chicken or mutton tikka. Sometimes food items are roasted in a metal karhai e.g. suji, chana dal.
- Grilling** : To cook food by placing on a metal grill over the source of heat. This method is used for cooking small portion of meat, fish or when food needs to be browned.
- Toasting** : Cooking or heating to a brown crispiness over a fire or on a grill.
- Baking** : To cook using equipment such as an oven tandoor in which hot air circulates. We bake biscuits, bread, cookies and cakes.
- Sauteing** : To cook by tossing food in a small amount of fat. Sauteing is often followed by some other method of cooking. We saute onions, tomatoes and other vegetables.
- Frying** : To cook in hot fat. When foods are partially immersed in hot fat, the method is called shallow frying . When foods are completely immersed, the method is called deep frying.

You would also notice how knowledge of nutrition and little thinking can help you select nutritious foods even if resources are limited. Now a word about good cooking practices.

### **Cooking Practices**

Foods can be cooked in many ways. Correct cooking practices ensure a better availability of nutrients and also enhance the nutritive value. Negative food concepts and cultural practices can be detrimental to your health. All foods contain nutrients in varying amounts. Food is cooked for better availability of nutrients and digestibility. Cooking improves the taste of food, its appearance, texture and flavour.

We cook by many methods such as boiling, steaming, pressure cooking, frying, roasting and baking. Cooking by frying is not as healthy as pressure cooking, boiling, steaming or even baking. On cooking foods go through a number of processes such as washing, cutting, marinating, fermenting, germination and then subjected to some method of cooking. During these various practices you must enhance the nutrition and not lose it. This can be done by following healthy cooking practices. These are :

- Get rid of any erroneous cultural beliefs.
- Wash vegetables whole and not after cutting.
- Do not soak cut vegetables in water for long hours.
- Cook food in small quantities of water.
- Do not discard the water in which rice/vegetables are cooked. This removes the water-soluble vitamins and minerals.
- Do not use soda while cooking pulses and vegetables. It destroys some vitamins.
- Cook food covered.

- Processes like fermentation and sprouting are good as they enhance B group vitamins and also vitamin C.
- Combine foods (Pulses, Cereals, Vegetables) as it improves the quality of protein and also vitamin A.
- Prefer steaming and pressure cooking to deep frying.
- Do not use the same heated oil for cooking several times, e.g. in frying.
- Do not cook food too long and make it mushy.

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## 1.5 FOOD SAFETY

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Consumption of safe foods is important. Foods spoilt by bacteria, moulds, natural enzymes, insects and rodents, adulterants can make the food unsafe for consumption. Low Intake of such foods can lead to ill health and food borne diseases. Food borne diseases occur with unsafe foods by improper cooking, processing, handling and even storage under poor environmental conditions the bacteria grows and cause disease. Common cause of these diseases is meat, milk and milk products like khoa and even other cooked foods kept out for a long time and not refrigerated. This is true of perishable foods which should be kept either hot (more than 60°C) or cooled quickly (below 10°C). This is because most micro-organisms multiply between 10°C-60°C temperatures.

Handling of food while preparing or while dishing it out must be done properly. Contamination should be avoided by using spoons etc. Personal hygiene is important as food should be touched only after washing hands properly. Any infections in the skin if present, care must be taken not to handle it. Rats and even household pets like cats and dogs should be kept away. Food should always be covered and crumbs etc. must be cleaned so that cockroaches are kept away.

Foods can also be adulterated by harmful colours, other poor quality products etc. for example oils can be adulterated with non edible oils like castor oil, milk powder with other starches, pulses may be coloured with metanyl yellow and black pepper with papaya seeds. Other materials like husk, sand and sandust is also mixed.

Pesticides are also a health hazard because they can remain in the crop as pesticide residues and cause health problems. Washing vegetables, fruits thoroughly before use, cooking adequately can reduce the effects to some extent.

So selection of non adulterated food, maintaining personal hygiene preparing and cooking food carefully, storing food safely and keeping the various areas of the kitchen clean including waste disposal can ensure safe food consumption.

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## 1.6 LET US SUM UP

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In this unit we have discussed the seven steps in planning balanced diets for an individual. You have learnt about the use of RDI tables, food exchange table, food plan, and the food distribution tables in planning of balanced diets. RDI table as you know list down the RDI for individual of various age groups and different sexes. Food exchange table gives amount per exchange (as well as the calories and protein per exchange) supplied by the various food groups such as cereals, roots and tubers, sugar, fat and oils, milk, pulses, meat/fish/poultry/egg, green leafy vegetables and other vegetables of fruits. Food table tells us about the number of exchanges of various food groups to be included in the diet of an individual. Food distribution table further gives distribution of the exchanges of the food plan in various meals. Last of all menu is prepared from the food distribution table giving information about the name of the dishes.

Another focal area of discussion in the skill is discussion on evaluation of diets. You have learnt about two aspects in evaluation of diets/meals and snacks for their nutritional acceptability and also the product acceptability. The overall acceptability of a product can also be judged by giving the scores. The highest score is given for a good product and the lowest score for a poor product.