UNIT 2 DIET FOR ADULTS

Structure

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2.2 Adulthood

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2.0 OBJECTIVES

After reading this unit, you will be able to:

- enlist the nutrient need for adults (young and old);
- describe how meal planning for adults varies based on age, sex and activity level;
- work out food plan for adults; and
- discuss special considerations for older adults.

2.1 INTRODUCTION

Before you begin, go through Block 5, Unit 2 of BNS-102 and read the description given under sub-section 2.3.3. i.e. influence of age, sex, activity level and physiological state.

Read Unit 1, Planning and Evaluation of Balanced Diets, with special emphasis on the basic steps involved in planning balanced diets. In fact we would suggest keep the theory blocks while working on this unit. You might need to consult it while using and adopting certain steps in planning diets for adults.

In between the sub-sections in this unit you will find interesting activities. Keep solving them as you move on. The activities are so designed to help you recall and apply the theoretical knowledge you have gained in the sub-section. To help you know whether you are on the right track, the answer to these activities are given at the end of the practical under the heading "Answers to Activities". Tally your responses with these.

At the end of this block you will find Appendix 2. It is a simple guide on what food items to select for different income groups that would insure nutritious meals. Study the Appendix carefully. You would need to consult it while selecting food items for different individuals — adults, pregnant/lactating women, children, adolescent. Appendix 1 is applicable to this unit as well as all other units following this.

In Unit 1, you were introduced to planning and evaluation of diets. You would have realized that meal planning is simple, but to master it, you require practice. First, you need to understand the steps involved in planning diets based on which you can plan meals for individuals of any age, sex and physiological state. Hope you have spent enough time in understanding these steps, because starting from this section till Unit 6 you will be planning diets for different individuals. This unit deals with planning diets for adults. Who is an adult? **Any individual, 20 years of age and above can be called an adult.** Now, can we have just one meal plan for adults? No, this is not possible because **age** (young/old) **sex** (male/female) and **activity level** (sedentary, moderate, heavy) influence nutrient need of adults. Based on the nutrient need, meal planning would vary. How to provide adequate/balanced meals for adults? What nutrients need to be emphasized for young women? What special dietary considerations are to be kept in mind for older adults? These are the issues highlighted in this unit.

Read the section carefully, attempt the activities given and you will find yourself well equipped in planning diet for adults. The first section : Diet for adults has been explained in more details to make you understand. The rest of the planning for other age groups must be done keeping the details of this unit in mind.

2.2 ADULTHOOD

Adulthood, you might recall, is the period starting from 20 years of age extending through middle age to old age. This is the stable period in life when growth and development has been completed. The nutrients are required primarily for maintaining body structure and function.

The period of adulthood can be divided into two stages — **young adult** (Fig. 2.1) and **old adult** (Fig. 2.2).

Fig. 2.1

Fig. 2.2

A person in the later years of adulthood representing the state when tissue breakdown is excessive. The body can no longer compensate for tissue loss adequately. Some changes in the body structure and functioning include reduced basal metabolic rate, demineralization of bones, tissue breakdown and lowered efficiency of work by vital organs like the kidney, gastrointestinal tract etc.

The nutrient need of adults (as discussed in the theory) are based on specific characteristics such as age, sex, activity level, income, socio-economic background, and region.

Some nutritional facts to remember:

- Adulthood there is cessation of growth and maturity is attained
- You require food mainly for maintenance of body tissues
- The RDA are expressed in terms of 'reference man' and 'reference woman'
- Fulfilling the RDA will make you healthy and keep diseases away.

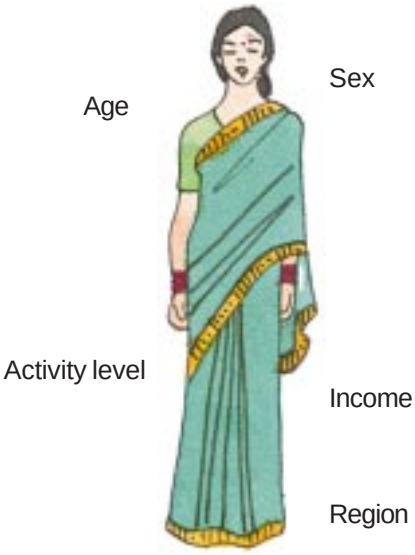

Fig. 2.3: Factors influencing nutrient need of adults

Keeping the above mentioned points in mind, nutrient needs are therefore, worked out based on Reference man and Reference woman. Who is the reference individual?

Definition of a Reference Man

An Indian man in the age group of 20-39 years doing moderate work and weighing 60 Kg is referred to as a Reference Man.

Definition of a ReferenceWoman

An Indian woman in the age group of 20-39 years doing moderate work and weighing 50 Kg is referred to as a Reference woman.

You will notice from the definition that the age, body size and activity levels of the reference individual is defined (see Fig. 2.4). Adjustments, therefore, need to be made in the nutrient need of adults who deviate from this reference. Look at Table 2.1, it gives (20-39 years) only. For older adults refer to Table 2.2. You have learnt earlier that with aging there is a decrease in body functioning as a result BMR is lowered and also physical activity is reduced. This results in lower demand for energy. Table 2.2 shows how energy requirement decreases with age.

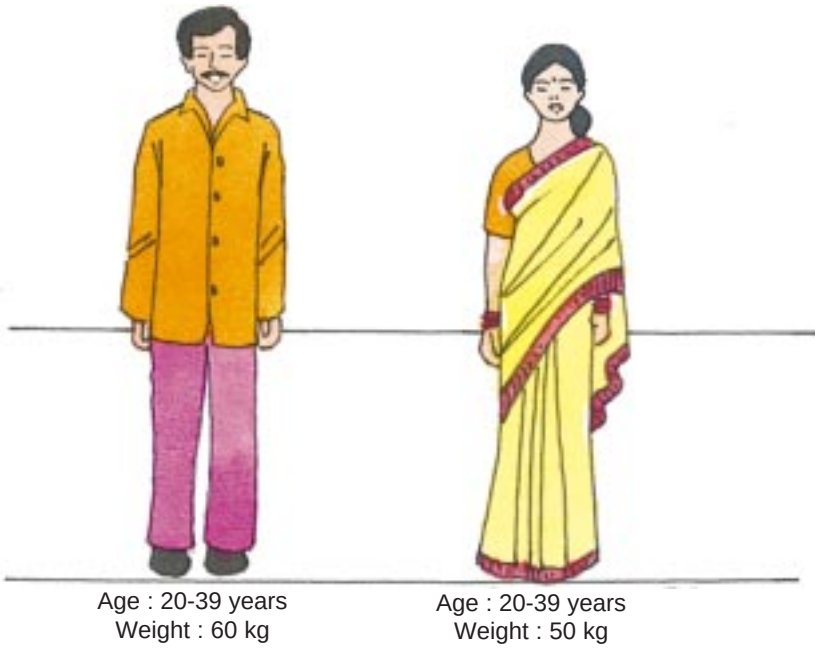

Fig. 2.4: The Reference man and woman

Table 2.1: Recommended Dietary Intake (RDI) for Adults: Reference Man and Woman

Nutrient	Man (Weight – 60 Kg.)			Woman (Weight – 50 Kg.)		
	Sedentary Work	Moderate Work	Heavy Work	Sedentary Work	Moderate Work	Heavy Work
Energy (Kcal)	2425	2875	3800	1875	2225	2925
Protein (g)	60	60	60	50	50	50
Calcium (ug)	400	400	400	400	400	400
Iron (ug)	28	28	28	23	30	30
Vitamin A (ug)						
Retinol	600	600	600	600	600	600
Or						
A-Carotene	2400	2400	2400	2400	2400	2400
Thiamine (mg)	1.2	1.4	1.6	0.9	1.1	1.2
Riboflavin (mg)	1.4	1.6	1.9	1.1	1.3	1.5
Niacin (mg)	1.6	18	21	12	14	16
Ascorbic acid (mg)	40	40	40	40	40	40
Folic acid (mg)	100	100	100	100	100	100
Vitamin B12 (ug)	1	1	1	1	1	1

Source: Nutrient Requirements and Recommended Dietary Intakes for Indians, ICMR (1990)

Table 2.2: Changes in RDIs for Energy with Age

Age (years)	RDI for energy
24 – 39	100
40 – 49	95
50 – 59	90
60 – 69	80
70 - 79	70

Source: Nutrient Requirements and Recommended Dietary Intakes for Indians, ICMR (1990).

After learning about the nutrient need let us learn more on how to plan diets for adults.

2.3 PLANNING DIETS FOR ADULTS

You are aware that nutrient need of adults vary. This would influence the meal planning. The kinds and amount of food selected and the meal patterns, adopted would vary. Therefore the first step is to identify the specific characteristics of the adults.

***Step 1:* Identify the Characteristics of the Individual**

Find out :

- the age of the adult. Is the adult young or old.
- the sex of the adult. Is the adult a male or a female
- the nature of work of the adult. Is the adult a sedentary or moderate or heavy worker.
- the income of the adult. Does the individual belong to high or middle or low income group?
- the region where the adult resides.

This information will help your decide the nutrient need of the individual and also the type of food items to be selected.

Activity 1

Suppose we need to plan meals for Ramu. Ramu is a labourer working at a construction site in North India. From this statement, what information have you gathered about Ramu. Put it in the space given below:

Characteristics of the adult :

Age :

Sex :

Activity level :

Income :

Region :

Yes, information regarding sex, activity level, income, region can be easily obtained. Ramu is a male doing heavy, strenuous work. He belongs to the low income group (a labourer) and lives in North India. What about his age? Well, that is not clear from the statement. We need to know whether Ramu is young or old. Based on this information only can you conclude his nutrient needs.

***Step 2:* Assess the Nutrient Need**

After identifying the adult, the next step is to assess the nutrient need.

Find out which nutrients are of particular importance for the adult. For this you will have to look up Table 2.3. Normally, energy and protein are the two nutrients of importance as other needs of nutrients can be fulfilled if these two are adequate. In Table 2.1 you would have noticed that the energy and the B vitamins (thiamine, riboflavin, niacin) need is different under three activity levels – sedentary, moderate and heavy (influence of activity level). Also the nutrient need for man and woman are different (influence of sex).

So, according to the particulars of the adult (age, sex, activity level) you are planning meals for them.

For example, if the adult is a male doing moderate work then his RDI would be:

Energy – 2875 Kcal, Protein – 60g …….. and so on.

If the adult is a woman doing sedentary work, her RDI would be:

Energy – 1875 Kcal, Protein – 50g ……. and so on.

Now, if the adult is old, what would be energy, protein need? Using Table 2.2 (Changes in RDA with age) we shall earn how to calculate energy needs for older adults later in this practical session.

You learnt that a sedentary young woman requires 1875 Kcal.

This is 100 per cent RDI referred to in Table 2.2 under 20-39 years. Now at the age of 40 this woman would require 95 per cent calories i.e. 95/100 ´ 1875 Kcal. Similarly, when she is 50, her energy requirement will further decrease to 90 per cent i.e. 90/100 ´ 1875 = 1690 Kcal. This way you can calculate the calories required for the adult till late old age. Normally activity levels reduce during old age. Most older adults are sedentary workers.

What about the protein need? The protein as well as the need for all other nutrients would be the same as those of young adults.

Now referring to the above mentioned levels, fill up the information on calories and protein in activities 2, 3 and 4.

Activity 2

1) Ramu is a young labourer working at a construction site. List down the RDI's for Ramu for the following nutrients.

   Energy (Kcal) :

   Calcium (mg) :

   Protein (g) :

   Iron (mg) :

2) Meena is a 20 years old housewife. Consult Table 2.1 and list the RDI for Meena other than energy and protein nutrients. Which nutrient would be of particular importance to Meena?

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3) Ramu's grandfather is 70 year old. He is a sedentary worker. Calculate his energy and protein need (Refer to Table 2.2).

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Important points that will help you to decide on the nutrient need of adults is given below. Read them carefully.

Points to Remember on RDIs for Adults

The following points should be kept in mind while deciding on the RDIs for adults:

- a heavy worker would require more energy as compared to a moderate or sedentary worker
- a woman would require less energy and protein as compared to a man of same age and activity level
- a woman requires more iron as compared to a man
- an older adult would require less energy as compared to young adult. The requirement for other nutrients would be the same as those of young adult.

Step 3: **Selection of Food Items**

We started meal planning by identifying the adult and then listing the energy/protein need based on age, sex, activity level. Based on the nutrient need, now in step 3 we will **decide the type and amount of food** we will include in the diet of the adult so as to meet his daily requirement.

To provide a nutritionally adequate and a well-balanced diet for the adult, include at least one food items from each of the three main food groups — energy-giving, body-building and protective/regulatory. The day's diet for an adult should essentially contain all food groups. The selection of food is based on income. A simple guide on food selection for different income group is given in Appendix 2.

Remember food selected should be according to :

— **Body need of the adult:** An individual doing heavy, strenuous work requires more energy as compared to moderate/sedentary worker. Hence, select more of energy rich foods (cereals, roots and vegetables, fat/oil, sugar/jaggery) for a heavy worker so as to meet the increased need for energy. Also selection should be based on food habits and preferences.

  A woman would need more of iron-rich foods. Include green leafy vegetables, pulses (soyabean, horse gram, bengal gram), cereals (bajra, rice flake) jaggery and liver/mutton among the flesh foods in diet.

  Older adults would require less of energy-rich foods. Fats/oils, sugar/jaggery, therefore, is to be omitted or restricted in the diet of older adults. Protective foods like fruits, vegetables and milk may be emphasized.

— **The region:** This tells us the area from where the adults come. For example, adults from Punjab have a greater preference for milk and milk products and meat products. South Indians would prefer rice based meals, people from the coastal region would prefer fish and other sea foods. The food habits in urban or rural area also vary. So select foods accordingly. Keeping the above mentioned factors and affordability in mind, attempt the following activities.

Activity 3

1) List the food items you would select for inclusion in your daily meals.

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2) Shamu is a rickshaw puller from Uttar Pradesh. To help meet his increased energy needs which food items should be emphasized from each of the following groups:

Energy giving foods

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Body building foods

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Protective foods

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3) Shanti is a stone cutter at a construction site from Rajasthan. She is poor and needs to be provided a low cost nutritious diet. What foods would you select for her from the following groups?

Energy giving foods

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Body building foods

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Protective foods

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4) What foods from the following group would you include in the daily diet of an elderly relative of your family?

Energy giving foods

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Body building foods

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Protective foods

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5) Find out which foods are avoided by older adults in your neighbourhood.

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After selecting the food items next decide the total amount of specific food item to be included in the day's diet for the individual. This as you know can be done by preparing a food plan. Prepare the food plan based on the exchange list you learnt earlier in Unit 1.

Look at Table 2.3. We have worked out the food plan (enlisting total amount of specific food items) for a sedentary man belonging to low income, middle income and high income group respectively. You would have noticed that all the plans provide about 2225 Kcal (the recommended dietary intake for sedentary man) but the number of exchanges the total amount of specific food items included in the day, in the three income groups vary. For example, in the low income food plan cereals, roots, pulses have increased considerably (75 per cent of the total energy derived from cereals), meat/fish/chicken and other animal food exchange (expensive foods) are omitted or should be reduced, milk exchange is reduced (and not to exceed one exchange). More emphasis is on pulse exchange (include only cheaper variety of pulses) and minimal amount of green leafy vegetables and other vegetables have been included. Fruits have been totally omitted, but if possible some seasonal fruit sprouted menu could be included in the menu.

The point to be noted here is that even for individuals with same activity level, the amount of specific food items to be included in their diet will be influenced by their income. You will notice that the LIG group takes more cereals and less milk, pulse, vegetables and no fruits and meat.

The food plan presented in Table 2.3 is one option. You can work out alternative plans.

Table 2.3: Food Plans for Sedentary Man Belonging to Different Income Group*

Number of exchangers/total amount(g) per day

	LIG		MIG		HIG	
Exchange	**Exch. No.**	**Amt. (g)**	**Exch. No.**	**Amt. (g)**	**Exch. No.**	**Amt. (g)**
Cereals	22	(440)	16	(320)	15	(300)
Roots/Tubers	2	(120)	2	(120)	1	(60)
Fat/Oil	8	(40)	7	(35)	7	(35)
Sugar/Jaggery	6	(30)	6	(30)	7	(35)
Milk	1	(125 ml)	1	(325 ml)	2	(500 ml)
Pulse	1	(45)	2	60	2	(60)
Meat/Fish/ Poultry/Egg	–	–	1	(30-40)	1	(30-40)
Green leafy vegetables	1	(50)	2	(200)	2	(200)
Other vegetables	1	(100)	2	(200-300)	2	(200-300)
Fruits	–	–	2	(160-200)	3	(240-300)

Note:

LIG : Low income group
MIG : Middle income group
HIG : High income group
AMT : Amount

* Food plan based on low cost balanced diet as recommended by ICMR; Nutrient Requirements and Recommended Dietary Intakes for Indians, ICMR (1990) (See unit 1 of this block)

Activity 4

Work out a food plan for Ravi who is a sedentary worker belonging to the HIG group. Prepare an alternate plan to the one given in Table 2.3.

Food Plan for Ravi

Exchange	Exchanges (No)	Energy (Kcal)	Protein (g)
Cereals			
Roots and Tubers			
Fat/Oil			
Sugar/Jaggery			
Milk			
Pulse			
Meat/Fish/Poultry/Egg			
Green leafy vegetables			
Other vegetables			
Fruits			
Total			

Was that not simple to do! We hope while deciding on the exchanges/amount of food for Ravi you kept the following points in mind. The food plan should:

- help meet the RDIs for Ravi
- provide nutrients in right amount and proportion. For example, 60-70 per cent of the total calories required by Ravi should be provided by carbohydrates (cereals, roots and tubers, sugar/jaggery); 15-20 per cent by fat.
- Consider the portion size i.e. include food in such amounts that Ravi can eat at one given time.

After doing the activity and reading the discussion above, you would have got a clear idea on how to prepare a food plan for adults of any age, sex, physical activity and income level. To get more practice now, prepare a food plan for moderately active woman (MIG). Before you do that, here are some handy tips on preparing food plans for adults.

- Remember, higher the activity, higher would be the energy need. To meet this requirement energy-giving exchanges — cereals, roots and tubers, fat/oil, sugar/ jaggery would increase.
- For vegetarians increase the pulse exchange. For non-vegetarians the amount of pulse exchange can be decreased, instead meat/fish/chicken/egg exchange can be increased (if income permits). Total meat fish exchange, however, should not exceed 3.
- Vegetable exchange need not exceed 4 exchanges. Divide the exchanges between green leafy and other vegetables.

Now a word about food plans for older adults

While preparing food plan for older adults keep the following points in mind:

- Cereals, roots/tubers exchange will decrease (because during old age total energy requirement decreases).
- Reduce the fat exchange and type of fat to be included.
- Milk exchange need not change but the quality of milk need to be changed. Include meat (meat without fat) or preferably white meat from fish or chicken.

- Include seasonal fruits and vegetables in adequate amounts (provide protective nutrients).
- During old age activity level reduces. Most elderly adults are sedentary workers.

Model food plan for older adults (70 year old) have been presented in Table 2.4 for your reference. Consult it. Likewise you can work out food plans for other elderly adults.

Table 2.4: Food Plan for Older Sedentary Adults

Exchange	Old Man		Old Woman	
	Exchange (No)	Amount (g)	Exchange (No)	Amount (g)
Cereals	8	(160)	6	(120)
Roots and tubers	2	(120)	1	(60)
Sugar/Jaggery	4	(20)	1	(10)
Fat/Oil	6	(30)	4	(20)
Milk	2	(560 ml)	2	(10)
Pulse	2	(60)	2	(60)
Meat/Fish/ Poultry/Egg	1	(30-40)	1	(30-40)
Green leafy vegetables	2	(200)	1	(100)
Other vegetables	2	(200-300)	2	(200-300)
Fruits	2	(160-200)	2	(160-200)
Total energy/protein (Kcal/g) Value		**1/10/61**		**1330/55**
RDI for energy (Kcal) Protein (g)		**1/00/60**		**1315/50**

Activity 5

Calculate the nutrient need (energy and protein) of Ramu's grandfather who is 62 years old. Prepare a food plan for him (providing 1940 calories and 60g protein).

Food Plan for Ramu's Grandfather

Exchange	Exchanges (No.)	Amount (g)	Energy (Kcal)	Protein (g)
Cereals				
Roots and tubers				
Sugar/Jaggery				
Fat/Oils				
Milk				
Pulses				
Meat/Fish/ Poultry/Egg				
Green leafy vegetables				
Other vegetables				
Fruit				
Total				

Step 4: Number of Meals

In Step 3 we learnt how to select the food items and decide on the total amounts to be included in a day's diet for adults. With this crucial work done we move to Step 4.

Consider your own example of an adult doing sedentary work. Can you write in the space below the **number of meal** you consume daily.

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Now observe in your neighbourhood the meal frequency of different sedentary adults.

S.No.	Sex	Age	Activity	Meal frequency	Sedentary adult
1.					
2.					
3.					
4.					
5.					

Is your meal frequency (number of meals consumed) similar to each one of them. No, you would have noticed that there can be no one standard meal frequency for a working sedentary adult. Meal frequency would vary from adult to adult based on nature of work, work timing and of course income. Look at the different meal patterns given below. Tick mark the one that you think is the most common in your region for your income group.

	A (3 meals)	B (4 meals)	C (5 meals)	D (6/7 meals)
1	—	—	—	Bed Tea
2	Breakfast	Breakfast	Breakfast	Breakfast
3	—	Lunch	Mid-morning meal	Mid-morning meal
4	Lunch (packed)	Tea	Lunch	Lunch
5	—	—	Lunch Tea	Mid-afternoon meal
6	—	—	—	Tea
7	Dinner	Dinner	Dinner	Dinner

Note

- Based on the nature of job and the work timings decide on the meal frequency. (For example, working adults might carry packed lunch, take heavy breakfast, some tea and dinner).
- Economic status influences meal frequency. People belonging to the low income group consume less meals. A 3 meal/day pattern (pattern A) would be adopted for low income adult, a 4/5 meal per day pattern (pattern B and C) for a middle income and a 6/7 meal/ per day pattern (pattern D) for high income adult.

Keeping the individual preferences, income and work schedule in mind decide on the number of meals for the young adult.

Activity 6

1) Rani is a school teacher. Her school timing is 8 A.M. to 1 P.M. Decide on her meal frequency (number of meals she should consume in a day).

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2) Mohan is a clerk in a government office. His work timings are 9 to 5 P.M. What would be his meal frequency.

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What about the meal frequency of older adults? The following discussion is on the meal pattern for older adults. Read it carefully.

Meal Frequency for Older Adults

It is associated with certain physiological changes. Changes associated with digestive tract functioning are most common. Elderly people are not able to digest the food properly as a result problems like heaviness and/or feeling of fullness (in the stomach) are commonly experienced.

To overcome this problem, changes in meal pattern is necessary. Small, frequent meals are recommended.

A 5-6 meal pattern should be adopted. Look at the pattern A and B.

A	B
Bed Tea	Bed Tea
Breakfast	Breakfast
Mid-morning meal	Mid-morning meal
Lunch	Lunch
Tea	Mid-afternoon meal
Tea	Tea
Dinner	Dinner

***Step 5:* Distribution of Food Plan between Meals**

Once we have decided on the number of meals, the next logical step is to distribute the total amount of food decided earlier in step 3, between the different meals.

Look at Table 2.3 for food plan of sedentary man belonging to MIG. You have the exchange ready for her. What about the meal frequency or sedentary adult. On the last step we learnt that a 4-5 meals/day pattern would be adopted by a sedentary MIG adult. Now go ahead and see how you would distribute the food exchanges (decided in step 3) between the 4 meals decided for a sedentary adult. Table 2.5 presents the distribution of Food exchanges over a day's meals for sedentary MIG adult.

How did we decide on the distribution? While distributing the exchange always remember the following:

- Ensure that lunch and dinner (individually) provide approximately 1/3rd of the total calories. Rest of the meals together can provide the remaining 1/3rd calories.
- Include some fat exchange in each meal
- Include at least one body-building exchange such as milk and milk products or pulse or meat/fish/poultry in each meal. Ensure no more than two of foods should be included in each meal. For example include one exchange of milk plus one exchange of pulse or one exchange of pulse plus one exchange of meat.
- Include atleast one protective/regulatory exchange (regulatory, fruits) in each meal. Do not include more than 2 exchange in one meal.
- Ensure that you include food items in amounts the adult can eat at one time. (Be careful of the portion and size).
- Be careful not to make the main meals too light or too heavy.

Table 2.5: Distribution of exchanges into day's meals

Exchange	Distribution of exchanges into day's meals				
	Breakfast	Lunch	Tea	Dinner	Exchange (No)
Cereals	4	5	2	5	16
Roots and tubers	–	1	1	–	2
Sugar/Jaggery	2	1	2	2	6
Fat/Oils	2	2	1	2	7
Milk	2	–	4	¾	12
Pulses	1	1	–	–	2
Meat/Fish/ Poultry/Egg	–	–	–	1	1
Green leafy vegetables	1	1	–	1	2
Other vegetables	–	1	–	1	2
Fruit	1	–	1	–	2

Note: The total exchange should tally with the amounts you have distributed for each meal.

Now, keeping these points in mind, try distributing the exchanges given in Food plan 2.3 earlier for sedentary man belonging to low income and high income group in Activity 7.

Activity 7

1) Distribute the total exchanges over a day's meal for sedentary LIG adult in the chart given below:

Distribution of exchanges over a day's meals*					
Exchange	Breakfast	Lunch	Tea	Dinner	Total Exchange (No)
Cereals					22
Roots and tubers					2
Sugar/Jaggery					8
Fat/Oils					6
Milk					1
Meat/Fish/ Poultry/Egg					12
Green leafy vegetables					–
Other vegetables					2
Fruit					1

- A 3 meal/day pattern would be adopted by LIG adult.

2) Distribute the total exchanges over a day's meal for sedentary man HIG in the chart given below:

Distribution of exchanges over a days meals*					
Exchange	**Breakfast**	**Lunch**	**Tea**	**Dinner**	**Total Exchange (No)**
Cereals					22
Roots and tubers					2
Sugar/Jaggery					8
Fat/Oils					6
Milk					1
Meat/Fish/Poultry/Egg					12
Green leafy vegetables					–
Other vegetables					2
Fruit					1

These activities would have surely given you enough practice in distributing total exchanges over different meals. Likewise, you can distribute the total exchanges for adults (man, woman, older adults etc.) depending on their meal frequency.

***Step 6:* Decide on Menu**

Now we move to the next step in meal planning (menu). Based on the distribution (worked out in Step 5) we decide on the menu.

How to write the menu is given in Table 2.6 which presents menu for sedentary man belonging to LIG and HIG respectively. These are based on the distribution given in Table 2.5 and alternate distribution given for Activity 7. ("Answers to Activities" are given at the end of the unit.)

Table 2.6: Menu for Sedentary Men Belonging to LIG, MIG, HIG

Low Income (3 meal)	Middle Income (4-5 meals)	High Income (6-7 meals)
Breakfast:	*Breakfast:*	*Bed Tea:*
Paushtik Roti	Missi Roti	Tea with rusk
Butter milk	(cereal, pulse)	*Breakfast:*
Lunch:	*Lunch:*	Milk
Chapati, Masoor Dal	Chapati/Rice	Buttered toast
Aloo Baningan	Moong Dal/Aloo	Boiled Egg
Vegetable	Gobi Vegetable	*Mid-morning*
Dinner:	Salad (Onion, tomato, cabbage).	Fruit juice
Chapati	*Tea*	*Lunch:*
Palak dal	Biscuits	Chapati
	Dinner:	Dal
	Chapati/Rice	Palak-Paneer, Karela
	Arhar Dal	sabji
	Ladu Fomger Vegetable	*Mid-afternoon*
	Curd	Fruit mix
	Bed Time:	*Tea:*
	Milk	Tea, vegetable cutlet
		Dinner:
		Methi Roti
		Urad dal
		Dry peas
		Rusmalai

On going through the menu, you would have noticed that all we have done is to translate the food exchanges (worked out in Step 5) into list of dishes to be served in each meal.

Step 7: **Check the Composition of a Day's Diet for an adequate Balanced Diet**

While writing and deciding on the menu always remember:

- Select those dishes liked by the individual. Plan the menu keeping the individual preferences (likes/dislikes) in mind
- Include acceptable dishes, food items only depending on the individual preferences
- Introduce variety in the menu. Avoid repetition of food items
- Prepare attractive meals (by varying the colour, texture and flavour).

Based on the above discussion now try working out a diet for a sedentary individual living in your region. Well, it could be for yourself. Remember that the diet should be

a) Individual-specific (suitable for you)

b) Income-specific (according to your income)

c) Region-specific (suitable for your region – North, South, East or West wherever you live).

2.4 SPECIAL CONSIDERATIONS FOR OLD ADULTS

By going through the steps involved in meal planning we have just learnt how to plan meals for adults. While planning meals for older adults, you would have realized greater care needs to be taken. Certain problems like loss of teeth, loss of appetite, poor digestion and constipation effect nutrition in the elderly. How to overcome these problems? Section 2.4 presents handy guidelines on diet changes in old age. Follow these guidelines while planning diets for older adults.

How to deal with problems which may effect the nutrition in the elderly.

Loss of Teeth

- Give pureed food or mechanically soft or soft food. We have talked about these foods in the theory.
- Add liquids, gravy to food to make it soft so that chewing is easy.
- Give nourishing foods which need little chewing and are easy to digest e.g soups, porridge, milk based drinks.
- Avoid fruits/vegetable which are hard and have thick peels and seeds. Hard fruits can be stewed (boiled in a little sugar syrup) and softened before serving.

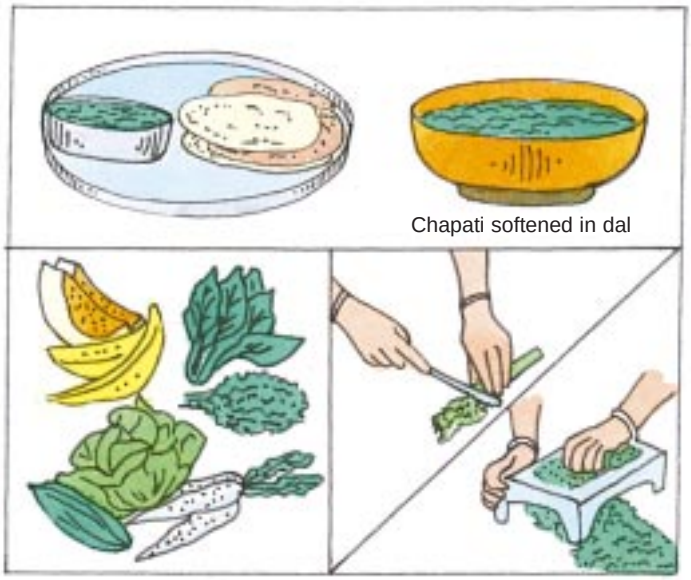

Fig. 2.5: Modifications in the food preparations for older adults

Loss of Appetite

- Serve attractive meals in pleasant surroundings.
- Increase the frequency of meals to 5/6 a day.
- Give enough time for the elderly to eat slowly
- Take into consideration the likes/dislikes of the elderly.

Poor Digestion and Constipation

- Serve fresh fruits and vegetables which are not very hard and do not cause indigestion
- Serve cooked and not raw vegetables
- Include staples such as potato, tapioca, rice, suji. Restrict use of whole cereals/grains
- Do not serve fatty, fried foods
- Ensure adequate fluid intake, through tea, milk and fruit juices
- Avoid very strong flavoured and gaseous foods, e.g. rajmah, black gram and cabbage, radish turnips etc.
- Serve small meals

Tips to Ensure a Healthy Heart in Old Age

- Cut down on sugar and fat intake
- Encourage consumption of vegetable oils rather than saturated fats such as ghee, butter, hydrogenated fat
- Avoid consumption of cholesterol rich foods like whole milk products, organ meat, egg yolk and cream and butter
- Include skimmed milk (milk from which the layer of cream on top removed) and lean meat (meat without fat) and white meat (fish and chicken) in the diet.
- Use pressure cooking, steaming and not frying.

Points to Remember for Older Adults	
Do's	***Don'ts***
1) Ensure sufficient intake of milk, vegetables, cereals	1) Serve cooked vegetable and not raw (salads)
2) Include more of protective foods such as fruits and vegetables in the diet	2) Avoid serving strongly flavoured foods and gas producing foods
3) Include plenty of water and fluids in the diet	3) Bland foods need not necessarily be given
4) Serve pureed, mechanically soft or soft foods	4) Avoid excessive spicy foods
5) Include soluble fibre in the meals	5) Cut down fatty, fried foods

2.5 LET US SUM UP

This section discussed diet planning for adults. You learnt about activity levels income, age, sex, meal pattern and region as to how these factors influence diet planning for adults. While planning meals for adults you should ensure that the diet is individualized.

In the case of old age, special care should be taken while planning meals. Changes in texture, consistency and meal pattern are necessary for acceptable, nutritious meal. We hope with the information given in the section you will be able to plan meals for yourself or other adults in your family. Working out the activities in this section would have given you enough practice in meal planning.

2.6 ANSWERS TO ACTIVITIES

Activity 1

Information regarding sex, activity level, income, region can be easily obtained. Ramu is a male doing heavy, strenuous work. He belongs to the low income group (a labourer) and lives in North India. What about his age? Well, that is not clear from the statement. We need to know whether Ramu is young or old. Based on this information only can you conclude his nutrient needs.

Activity 2

1) Ramu is a heavy worker (laboures at construction site). His RDI would be

   Energy (Kcal) : 3800

   Calcium (mg) : 400

   Protein (g) : 60

   Iron (mg) : 28

2) ● Meena is a housewife (sedentary worker if she has a maid working for her). Her RDI would be

   Energy (Kcal) : 1875

   Protein (g) : 50

   Iron is the other nutrient which need to be emphasized for her.

   ● Meena is a housewife doing all the housework.

   In this case you can consider her as a moderate worker. Her RDI's for energy and protein would be

   Energy (Kcal) : 2225

   Protein (g) : 50

3) 70 year old man (sedentary worker) requires 70 per cent of RDI for energy. Total energy requirement will be 70/100 of 2425 == 1697.5 Kcal

Activity 3

1) Answer based on your own experience

2) Shamu is a heavy worker who requires more energy. To help meet his energy need energy-rich foods cereals, roots and tubers, fat/oil, sugar/jaggery should be emphasized.

3) Cheaper variety of cereals like rationed wheat/rice or others like bajra, jowar

   - Mixed pulses
   - Cheap variety of milk — toned milk
   - Seasonal and locally available fruits and vegetables
   - Cheap variety of oil such as palmolein
   - Use of jaggery instead of sugar

- Combine foods and cook germinated pulse started foods

4) - Protective food like fruits, vegetables
   - Milk will be emphasized

5) - Answer based on your own experience

Activity 4

Food Plan for Ravi

Exchanges	Exchange (No)	Energy (Kcal)	Protein (g)
Cereals	15	1050	90
Roots and tubers	2	140	4
Fat/Oils	6	120	–
Sugar/Jaggery	8	360	–
Milk	2	340	16
Pulse	2	200	14
Meat/Fish/Poultry/Egg	1	70	7
Green leafy vegetables	1	–	–
Other vegetables	2	80	4
Fruit	2	80	–

Activity 5

Food Plan for Ramu's Grandfather

Exchanges	Exchange (No)	Energy (Kcal)	Protein (g)
Cereals	10	700	20
Roots and tubers	2	140	4
Fat/oils	3	60	–
Sugar/Jaggery	7	315	–
Milk	2	190	16
Pulse	2	200	14
Meat/Fish/Poultry/Egg	2	140	14
Green leafy vegetables	2	40	2
Other vegetables	2	80	4
Fruit	2	80	–
Total		**1945**	**74**

Activity 6

1) Bed Tea
   Breakfast
   Mid-morning Snack
   Lunch
   Tea
   Dinner

Activity 5

2) Breakfast (heavy)
   Packed lunch
   Mid-afternoon Snack
   Tea
   Dinner

Activity 7

Distribution of exchanges over a days meal for sedentary LIG man

Exchange	Breakfast	Lunch	Dinner	Total Exchange
Cereals	6	8	8	22
Roots and tubers	–	1	1	2
Fat/Oils	2	3	3	8
Sugar/Jaggery	4	–	2	6
Milk	2	–	–	2
Pulse	–	¾	¾	12
Meat/Fish/Poultry/Egg	–	–	–	–
Green leafy vegetables	–	–	2	2
Other vegetables	–	1	–	1
Fruit	–	–	–	–

2) Distribution of exchange over a day's meal for sedentary HIG man

Exchange	Distribution of exchange over a day's meal*							Total Exchange
	Bed Tea	Break fast	Mid morning	Lunch	Mid afternoon	Tea	Dinner	
Cereals	1	3	–	4	–	2	5	15
Roots and Tubers	–	–	–	–	2	2	–	1
Fat/Oils	–	2	–	2	–	1	2	7
Sugar/Jaggery	1	2	–	–	–	2	2	7
Milk	4	2	–	2	–	4	2	2
Pulse	–	–	–	1	–	–	1	2
Meat/Fish/ Poultry/Egg	–	1	–	–	–	–	–	1
Green leafy vegetables	–	–	–	1	–	–	1	2
Other vegetables	–	–	–	1	–	2	2	2
Fruit	–	–	2	–	1	–	–	3