

14. NUTRITION DURING ADULTHOOD

An individual should consume balanced diet to live a healthy life. A balanced diet is where there is an adequate amount of carbohydrates, proteins, fats, vitamins and minerals. Requirements of essential nutrients for our body are affected by various factors such as sex, age, weight, height, physical conditions, body build, etc.

Puberty comes at the beginning of adolescent age. At this time, the teenager attains his entire physical, growth and development along with the psychological growth which makes him mature youth. Usually 21-40 years of period is called adulthood and after that old age starts. Physical, mental, social, emotional, changes occur very slowly during this phase.

“We eat to live, not live to eat”, this quote means food is essential for human beings to live their life. Our objective should not be eating only spicy and delicious food, but our diet should be balanced so that our body can get essential nutrients.

Physical growth during adulthood stops in terms of height and weight while maintenance of cells and tissues goes on continuously. Therefore, balanced diet should be given to adults so as to maintain their physical and mental health. The self-sustained food taken in the adulthood maintains health in late adulthood.

Nutritional requirements in adult male and female depend on difference in their weight and physical structure.

A Reference Indian man is defined by ICMR as “an adult male of 20 to 39 years of age, whose weight is 60 kg, height is 163 cm tall, free from disease, he

is physically fit for active work. On each working day, he is employed for 8 hours in occupation that usually involves moderate activity. While not at work, he spends 8 hours in bed, 4-6 hours sitting and moving around and 2-4 hours in walking and active recreation or household duties.

According to ICMR for female “an adult woman of 20 to 39 years of age, whose weight is 55 kg, height is 151 cm tall, free from disease, physically fit for active work. On each working day, she is employed for 8 hours in occupation that usually involves moderate activity. While not at work, she spends 8 hours in bed, 4-6 hours sitting and moving about and 2-4 hours in walking and active recreation or household duties.

Nutritional requirements :

ICMR has recommended the daily proposed quantity of essential nutrients for adults, as follows:

Energy : The demand for energy depends on the physical activity and time spent on it. Activity is divided into three parts on the basis of physical work.

- 1. Heavy worker :** People falling under this category do a lot of physical work, such as a farmer, who is carrying a burden, laborers, the rickshaw drivers, etc. and therefore, they require more energy-producing food items.
- 2. Moderate worker :** Those who perform light work and domestic tasks fall under this category such as teacher, housewives, peon, bus conductor, goldsmith, clerks, women etc. So they require less energy producing food items than heavy worker.

3. Sedentary Worker : People who perform only mental tasks and do not do domestic work or even light work, they fall under this category,

such as physician, manager, professor, IAS officer etc. So the demand for their energy is least.

Table 14.1 Recommended dietary allowances of nutrients for adulthood (NIN-2010)

Nutrients	Activity					
	Sedentary		Moderate		Heavy	
	Male	Female	Male	Female	Male	Female
Energy (K cal)	2320	1900	2730	2230	3490	2850
Protein(g)	60	55	60	55	60	55
Visible Fat (g)	25	20	30	20	40	20
Calcium(mg)	600	600	600	600	600	600
Iron (mg)	17	21	17	21	17	21
Beta carotene (ug)	4800	4800	4800	4800	4800	4800
Thiamine(mg)	1.2	1.0	1.4	1.1	1.7	1.4
Riboflavin (mg)	1.4	1.1	1.6	1.3	2.1	1.7
Niacin (mg)	16	12	18	14	21	16
Pyridoxine (mg)	2.0	2.0	2.0	2.0	2.0	2.0
Vitamin C(mg)	40	40	40	40	40	40
Dietary Folate (ug)	200	200	200	200	200	200
Vitamin B ₁₂	1.0	1.0	1.0	1.0	1.0	1.0
Zinc (mg)	12	10	12	10	12	10
Magnesium (mg)	340	310	340	310	340	310
Body weight(kg)	60	55	60	55	60	55

Protein : Animal protein sources will be good for health. The diet should consist of pulses, soybean, milk, meat, fish, egg, etc. to fulfill the requirement of protein.

Fat : 0.5 g/kg and 1 g/kg of fat should be taken from animal and vegetable sources respectively. Amount of visible fat is fixed i.e. 18 to 20 gm from oil, ghee etc.

Minerals : The ratio of calcium and phosphorus should be 1:1 (Ca:P). The iron requirement among females is 2 mg greater than male's requirement.

Vitamins : Requirement of B-vitamins depend

on calorie requirement (0.5mg Thiamine, 0.6mg Riboflavin, 6.6mg Niacin). Thus, requirement of vitamin B depends on the activeness of an individual.

Water : Adults should drink at least 8-10 glasses of water in a day in the form of milk, curd, buttermilk, soup, tea, coffee, etc.

Nutritional Related Problems :

Nutrition in adulthood is affected by their profession, activity, income and daily routine. Due to overnutrition, adults face physical as well as mental health problems such as high blood pressure, diabetes, heart diseases, stress and depression, due to which their dietary system gets affected.

Table 14.2 Balance diet for adults (NIN, 2010)

Food group	Quantity of food item (gram)					
	Sedentary		Moderate		Heavy	
	Male	Female	Male	Female	Male	Female
Cereals	375	270	450	330	600	480
Pulses	75	60	90	75	120	90
Milk (ml)	300	300	300	300	300	300
Root and tubers vegetables	200	200	200	200	200	200
Green leafy vegetables	100	100	100	100	100	100
Other vegetables	200	200	200	200	200	200
Fruits	100	100	100	100	100	100
Sugar	20	20	30	30	55	45
Fat /oil	25	20	30	25	40	30

Note : Non-vegetarian people can take 50g of egg/meat/fish instead of 30g pulses

It can be observed from table 14.2 that, requirement of food such as cereals, pulses, root vegetables, sugar and ghee/oil also increases in terms of quantity with an increase in physical activity. Because their food group should supply more energy and other nutrients to meet the greater body work. Adult diet can be planned according to economic status of the family.

Dietary pattern :

- (1) Diet of whole day should be divided into 3 meals-breakfast, lunch and dinner.
- (2) All the essential nutrients should be available in each meal.
- (3) For those people/adults who go for work daily, their tiffin boxes should be nutritious, appealing and palatable.
- (4) It can be included in lunch or dinner if any essential nutrient is skipped during packing of tiffin.
- (5) It is important to take care of type of fat/oil being used while cooking so that possibility of

heart disease, high blood pressure may be reduced to some extent.

- (6) Quantity of calcium should be proper in the diet of a person.
- (7) Iron content should be higher in the diet of female. Iron rich food are whole grain cereals, pulses, green leafy vegetables, egg, meat, etc.
- (8) Sources of dietary fiber such as raw fruits and vegetables should also be included in the diet.

Diet planning according to activity :

Nutrient requirements :

The needs for essential nutrients increases as the physical activity increases. Requirements for vitamin-B group like thiamin, riboflavin, niacin depends on energy requirement.

1. The person who is a sedentary worker needs 450 kcal less energy than a moderate worker. Thus, he should take less amount of cereals, sugar and fat and should include more of dietary fiber green leafy vegetables in the diet.

- Heavy worker needs 925 kcal more energy as compared to a sedentary worker. Thus, amount of cereals, fats, sugar, should be higher for them. Protein, vitamin A, vitamin B nutrients may be increased or decreased according to their activity.

Diet planning according to income group :

i) Low income group :

Person with low income group, should adjust his diet in the following ways so that he can get maximum nutrients even in low income.

- Quantity of milk, meat, fish, should be less.
- Grains and pulses should be mixed together to ensure quantity and quality protein
- Seasonal cheap vegetables should be used instead of expensive fruits and vegetables.
- Seasonal fruits should be included in the diet.
- Enough sprout should be consumed to get vitamin C and other vitamins.
- Reduce amount of fat and oil and increase amount of sugar and jaggery to keep the energy source maintained.

ii) High income group :

- High quantity of milk, meat and fish should be consumed.
- Reduce quantity of cereals and pulses.
- Income is not an issue. Therefore eat all fruits and vegetables as much as possible.
- In case of high income group, quantity of fat/oil is usually higher than the low income group. Therefore, sugar and jaggery be reduce to curtail the energy.

Low cost balanced diet :

Diet of adult belonging to low income group can be made nutritious in following way :

- Mix 2-3 cereals and one millet instead of one cereal.
- One must eat 50 gm green leafy vegetable, so that quantity of vitamin-A, iron and calcium be increased.
- Consume cheap & yellow fruits like papaya, mango etc. to fulfill the requirements of vitamin A & C.

- Take 150 ml milk daily to get riboflavin & calcium.
- Add extra quantity of oil (10 gm) in diet as concentrated source of energy.

Table : 14.3 Low cost balanced diet for sedentary man

S.No.	Food Groups	Quantity
1	Cereals	460
2	Pulses	40
3	Green leafy vegetables	50
4	Roots & Tubers vegetable	60
5	Other vegetables	50
6	Milk	150
7	Sugar & Jaggery	40
8	Ghee & Oil	30

Suggestions for low cost food :

- Always buy grocery from public distribution shop.
- Use sorghum & pearl millet at night.
- Exchange expensive food items with low cost food.
- Prepare big & thick chapatti.
- Buy green leafy vegetable like spinach, fenugreek, amaranthus etc. from kitchen garden at low cost.
- Prepare food using various preprocessing methods like fermentation, malting and germination these methods increase the nutrients with less expenditure.
- Leaves of cauliflower, carrot, beetroot, radish and onion be included in daily diet, they are rich in nutrients.
- Food prepare at home is less expensive so carry food in tiffin at work.
- Steamed food is nutritious and low in cost as compared to fried food.
- Use jaggery instead of sugar.

11. Add seasonal fruits like papaya, guava, etc. in diet.
12. Fresh & natural foods are cheaper & nutritious than preserved foods.

Important Points :

1. Adulthood lies between the adolescent (20-21 years) and old age than starts late adulthood which continue till old age starts.
2. Nutrients requirements of adulthood varies according to their physical activity and sex.
3. Heavy workers require high quantity of nutrients but their income is less. They spend 60-70% of salary on food.
4. Sedentary worker males & females get handsome salary. They can afford costly food in their diet.
5. Moderately workers have moderate/average salary and they can afford appropriate expenditure on food but consume imbalanced diet, due to unawareness, lack of nutrition knowledge, ignorance and busy schedule. They are not able to take balanced diet.
6. Planning of meals for adulthood be done according to income group by selecting the food items in proper quantity from each food group.

Questions :

1. Choose the right answer of the following question :
 - (i) Adulthood starts from :
 - (a) 18-19 to 40 years (b) 19-20 to 40 years
 - (c) 18-20 to 40 years (d) 20-21 to 40 years
 - (ii) Economic and social sustainability stage is :
 - (a) Adulthood (b) Late adulthood
 - (c) Childhood (d) Old age

- (iii) Male and female working in office are :
 - (a) Heavy worker (b) Moderate worker
 - (c) Sedentary worker (d) None of them
- (iv) Heavy workers spend% of their salary on food :
 - (a) 40-50 (b) 60-70
 - (c) 70-80 (d) 80-90
- (v) Obesity commonly develop in :
 - (a) Woodcutter & rikshawpullar
 - (b) Fisherman & Potmaker
 - (c) Businessman & Administrator
 - (d) None of these
2. Fill in the blanks :
 - (i) is the stage when adolescent attain complete physical growth and development with mental stability and become mature youth.
 - (ii) Early adulthood and late adulthood commonly known as
 - (iii) persons acquire high salary per month while perform less physical work.
 - (iv) Adult male and female must take & mg iron per day in their diet.
 - (v) worker require high energy.
3. Nutritional requirement of male and female are different. Explain.
4. What point will you keep in mind while planning meal for adult ?
5. Suggest points for low cost nutritious food.

Answers :

1. (i) d (ii) b (iii) c (iv) b (v) c
2. (i) adulthood (ii) adult
- (iii) sedentary worker (iv) 30, 28
- (v) heavy worker