

## 13. NUTRITION DURING ADOLESCENCE

Adolescence is 13-21 years of age. This is the stage of change. Kishoravastha translated from English word. This word is from Latin language 'Adolescere' which literally means "moving towards maturity". Adolescence is period which starts after childhood and upto adulthood. It is a period of physical and mental change.

Boys tend to mature later than girls. Adolescent girl starts at the age of 10-11 years and is upto 17-18 years while in boys it starts at the age of 13-14 years and is maintained upto 21 years. Physical development is fast during adolescence after infancy. Overall development takes place in this stage such as physical, mental, social, cognitive and emotional.

### Changes during adolescence :

1. **Physical growth :** Adolescence is the stage of change. It is also known as the stage of complete growth. Physical development is very fast in this stage. Physical development mean an increase in height, muscle mass, deposition of fat all comes under.
2. **Physical change :** With increment in height and weight there are some changes taking place for eg, start of menstrual cycle in girls (menarche), development of breast, accumulation of fat, hair growth on armpit and pubic area, thinness in voice, while in boy's growth of beard and mustaches, harshness in voice, strength and rigidity of muscles, development of bone. The main reason for these changes is hormones.
3. **Cognitive changes :** Adolescents have good communication and debating quality. This age is

maximum development stage. They are able to make decisions. They are conscious towards their studies and job and also want to take decisions by their own.

4. **Social change :** It is a stage of self dependency. Adolescents are physically and mentally mature in this stage. They avoid interference in their work. They are matured enough to behave in society.
5. **Sensory and emotional development :** Coping with physical changes, studies, career, and adjustment with society is difficult for adolescents. They are very emotional and unstable in this age. Firmness in social and moral duties, lack of maturity their aims are not fulfilled. They face real life hardship and they emotionally get disturbed due to loss of idealistic values.

Adolescence is a period of rapid growth and proper nutrition is required for its development. On the other hand they are stressed due to many changes which are taking place like physical growth and studies, career, society approval hence do not concentrate on food. Most of the time they out due to career and studies that also affect their food intake. All these pressures make changes in their eating habits which give adverse effect on their health. Hence, looking into rapid growth it is very important to take balanced diet. Growth may be stunted in its absence and work capacity is also affected.

### Nutrition related problems :

1. **Change in food habit :** There are several

nutritional changes taking place in adolescents residing in urban areas. They prefer foods with their friends in restaurants. They like junk and fast foods, they do not like dal, vegetable, chapattis etc. They consume foods like pizza, burger, magi, chowmein, sandwich, idli, dosa, biscuits, potato wafers, chat, pakoras etc. Fruit juices and fruits are replaced by cold drinks eg- soda water, preserved and aerated drinks, hard drinks. They provide no nutrition since food available in market is not hygienic.

2. **Obesity** : Poor dietary habits combined with decreased physical activity increase weight and obesity among adolescents in urban areas. Increment in weight is due to growth of muscles and fat in the body, but deposition of fat balances the increment in height. Sometimes obesity of adolescence invites many diseases in adulthood.

3. **Underweight and weakness** : Normally adolescents are very particular about their physique, they reduces their intake which affects their body. There are irregularity in their menstrual cycle, depletion of fat, muscle, blood pressure and metabolism occurs.

4. **Anemia** : Anemia is more common among adolescents because amount of blood and haemoglobin decreases. Face and nails are pale.

Problems of adolescents can be solved by taking less spicy food and a balanced diet by using various food items.

Requirement of all nutrients increases during adolescence due to growth and development. In this milestone of life, physical growth is maximum and hence nutritional requirement also increases. Reduction in growth and development also reduces requirement of nutrients upto adulthood. Table shows nutrient requirement of various nutrients by age.

**Table 13.1 Recommended dietary allowances for adolescents**

Nutrients	Adolescents (age in years)					
	10-12		13-15		16-18	
	Boys	Girls	Boys	Girls	Boys	Girls
Calorie (Kcal)	2190	1970	2450	2060	2640	2060
Protein (g)	54	57	70	65	78	63
Fat (g)	22	22	22	22	22	22
Calcium (mg)	600	600	600	600	600	600
Iron (mg)	34	19	41	28	50	30
B-carotene (µg)	2400	2400	2400	2400	2400	2400
Thiamine (mg)	1.1	1.0	1.2	1.0	1.3	1.0
Riboflavin (mg)	1.3	1.2	1.5	1.2	1.6	1.2
Niacin (mg)	15	13	16	14	17	14
Pyridoxine (mg)	1.6	1.6	2	2	2	2
Vitamin C (mg)	40	40	40	40	40	40
Folic acid (µg)	70	70	100	100	100	100
Vitamin B12 (µg)	0.2-1.0	0.2-1.0	0.2-1.0	0.2-1.0	0.2-1.0	0.2-1.0
Weight (kg)	35.4	31.5	47.8	46.7	57.1	49.9

**Energy :** Calorie needs increase with metabolic demands of growth and energy expenditure. Although individual needs vary, girls consume fewer kilo calories than boys because they have less weight, height, metabolism and physical activity.

**Protein :** Protein is structural part of each and every cell. Requirement of protein increases due to rapid physical growth and development. It is also required for the development of bone and muscles. Puberty in girls start at the age of 10-12 years while in boys it is 12-14 years, physical growth in girls is more at the age of 10-12 years as compared to boys.

With the increase in demand of protein, quality should also be considered for the development and complete growth of the body. Good quality protein is required for the same i.e. egg, meat, fish, milk and milk products, khoya, paneer, cheese etc. Complete protein can be prepared for vegans by mixing different food items for eg, cereal + pulses.

**Fat :** Urban children have more liking to sugary and fatty foods for eg, cake, pastry, pakora, wafers etc, and its consumption leads to obesity. Total fat intake recommended by national nutrition organization is 25 g per day.

**Vitamins :** Adequate amount of all vitamins are required during adolescence. These recommended vitamins fulfill the requirement of B vitamins (thiamine,

riboflavin and niacin) which increases the requirement of energy as all the three vitamins are required for the metabolism of carbohydrate, protein and fat.

**Minerals :** Requirement for calcium, phosphorus and iron increases during adolescence. Calcium and phosphorus is required for the growth of bone. Increment in weight also increases, fluid in the blood. With the increase in blood level, haemoglobin increases by 2 gm/100ml in boys and 1g/100ml in girls. Iron is required for formation of heamoglobin. Menarche start in this age to compensate loss during menstruation iron is required.

Requirement of iron in boys is more as compared to girls although they have loss of iron through menstruation every month. Weight of girls is less as compared to boys hence they require less iron to transport oxygen in the body. Secondly, iron present in food is readily absorbed by girls as compared to boys.

**Water :** Liquid in the form of milk, curd, buttermilk, fruit juices, rice and dal soup is required in appropriate amount. Intake for fluids should be 8-10 glasses per day.

### **Meal planning :**

Adolescent should include all food groups to meet above mentioned nutrients and add variety of foods in their diet according to table 13.2

**Table 13.2 Balance diet for adolescents per day**

Food groups	Quantity of food items (in gms)	
	13-18 years	
	Boys	Girls
Cereals	420	300
Pulse	60	60
Milk (m.l)	500	500
Roots and tubers	200	100
Green leafy vegetables	100	100
Other vegetables	100	100
Fruits	100	100
Sugar	35	30
Ghee/oil	25	25

### Points to be considered while planning meal for this group :

1. Meal should be planned according to requirement, physical growth and development of adolescent.
2. Meal planning should be according to the schedule of their school and college.
3. Such foods should be included which takes less time to cook and also meet the nutrient requirement.
4. Foods should be according to the interest of adolescents for eg, sandwich, khaman, burger, pizza, chowmein, idli, dosa, etc which is ready to cook and it also reduces craving towards market food.
5. Adolescents have mood swings which affect the nutritional acceptance. Hence, there should be flexibility according to their mental state.
6. Availability of snacks should always be there, so that they can munch in between main meals. It should fulfill their nutritional requirement.
7. Adequate milk and green leafy vegetables intake fulfill the increased requirement of calcium and iron in adolescent. If milk and green leafy vegetable are not liked then it should be given in some other form. Their forms can be changed as milk in curd, raita, buttermilk, paneer, khoa sweets. Parathas, sandwich, burger, pakoras, pav-bhaji, chowmein etc can be prepared from green leafy vegetables.
8. It is necessary to incorporate seasonal fruits.
9. There should be variety in food for eg colour, aroma, taste to increase interest in food.
10. Trend of party is increasing day by day plan to arrange it at home so that adolescents can get food prepared hygienically and nutritious too.

Looking into the lifestyle of adolescent's knowledge of balanced diet and good eating habits should be inculcated into them, which will suffice their nutritional need per day whether they are at home or out.

### Important Points :

1. Adolescence is stage between childhood and adulthood. It is at the age of 13 to 21 years in which growth and development is very fast.
2. Girls experience adolescence 1-2 years prior than boys. It starts at 10-11 years and maintained upto 17-18 years while in boys it starts at the age of 13-14 years and is upto 21 years.
3. Physical and mental changes are seen in adolescence along with increment in height weight. Reasoning, thinking, and debating efficiency also increases. Due to physical change studies and stress of career and changing situation of society, coping with entire situation is difficult for adolescent. Mood swings which make them aggressive although it is impulsive.
4. Onset of adolescence changes their eating habits.
5. Normally, adolescents are more conscious about their health and physique. Girls intentionally reduce amount of food in order to look lean, thin and beautiful.
6. Amount of blood cannot compensate with increase amount of haemoglobin with rapid increase in physical growth. Adolescents face problem of anemia. Apart from over activation of oil glands leads to infections, acne problems.
7. Physical growth is highest during adolescence which increases nutritional requirement.
8. Meals for adolescents should be planned in such a way that it suffice the nutritional requirement and should be according to their school, college and other activities.

### Questions :

1. Choose right answers of the following questions
  - (i) Normally adolescence age is
    - (a) 14 to 18 years
    - (b) 13 to 21 years
    - (c) 12 to 20 years
    - (d) 10 to 15 years
  - (ii) Emotions of adolescence are
    - (a) Flexible
    - (b) Sluggish and long
    - (c) Rapid and impulsive
    - (d) Normal

- (iii) Iron requirement of girls at the age of 13-15 years  
 (a) 30 mg (b) 28 mg  
 (c) 40 mg (d) 32 mg
- (iv) Reduction in amount of haemoglobin in blood during adolescence is due to which disease  
 (a) Obesity (b) Beri-Beri  
 (c) Anemia (d) Goiter
2. Fill in the blanks :
- (i) Adolescence in girls starts at ..... years and is up to 17–18 years.
- (ii) ..... are more conscious about their health and physique.
- (iii) ..... groups requirement increases with increase in energy.
- (iv) Boys/ girls should take ..... glasses of water or other fluids daily.
- (v) adolescent meal planning should be according to ...../..... and .....
3. Discuss changes taking place during adolescence  
 (i) Physical growth  
 (ii) Cognitive change  
 (iii) Social change
4. Nutritional requirement during adolescence increases. Why?
5. Explain with example food habits of adolescents.
6. Explain in brief about points to be considered while planning meal for adolescents.
- Answers :**
1. (i) b (ii) c (iii) b (iv) c
2. (i) 10-11 (ii) adolescent girls  
 (iii) vitamin B (iv) 8-10  
 (v) school/college, activity.