

## UNIT II

### Chapter 2

## *NUTRITION DURING CHILDHOOD AND ADOLESCENCE*

### **Learning Objectives:**

After reading this unit, the students will be able to:

1. Learn nutritional needs in children and adolescents.
2. Plan a balanced diet for children and adolescents.
3. Plan a nutritious lunch box for children.
4. Illustrate factors affecting food and nutrients intake.

Healthy eating in childhood and adolescence is important for proper growth and development and to prevent various health conditions. Childhood is the time for children to be in school and at play, to grow strong and confident with the love and encouragement of their family and an extended community of caring adults. Eating a balanced diet and regular exercise is essential for all individuals, but particularly for school-aged children. Poor nutrition compromises both the quality of life of school-aged children but also their potential to benefit from education. Good nutrition of school aged children will also make sure they grow to their full potential, and provide the stepping stones to a healthy life. The best nutritional advice to keep children healthy includes encouraging them to eat breakfast every day.

The (WHO) defines an adolescent as any person between ages 10 and 19. Adolescents also undergo a very rapid growth during their puberty (called the pubertal growth spurt). The nutritional requirements of young people are influenced primarily by the spurt of growth that occurs at puberty. The peak of growth is generally between 11 and 15 years for girls and 13 and 16 years for boys. The nutrient needs of individual teenagers differ greatly, and food intake can vary enormously from day to day, so that those with deficient or excessive intakes on one day may well compensate on the next. In this period of life, several nutrients are at greater deficiency risk including iron and calcium. World Health Organization .

## **Iron**

Among adolescents, iron-deficiency anaemia is one of the most common diet-related deficiency diseases. Adolescents are particularly susceptible to iron deficiency anaemia in view of their increased blood volume and muscle mass during growth and development. This raises the need of iron for building up haemoglobin, the red pigment in blood that carries oxygen, and for the related protein myoglobin, in muscle. The increase in lean body mass (LBM), composed mainly of muscle, is more important in adolescent boys than in girls. In preadolescent years, LBM is about the same for both

sexes. Once adolescence starts, however, the boy undergoes a more rapid accumulation of LBM for each additional kilogram of body weight gained during growth, ending up with a final LBM maximum value double that of the girl. Other factors contributing to elevated iron needs are increased body weight and the beginning of menstruation for girls. All these factors should be taken into account when assessing iron needs in this group of age.

foods such as lean meats and fish as well as beans, dark green vegetables, nuts and iron-fortified cereals and other grains. Iron from animal foods (known as haem iron) is much better absorbed than iron from non-animal sources (non-haem iron). Adolescents following vegetarian diets are therefore at an increased risk of iron-deficiency. However, vitamin C (e.g. from citrus fruits) and animal proteins (meat & fish) assist in the absorption of non-haem iron.

## **Calcium**

The skeleton accounts for at least 99% of the body stores of calcium and the gain in skeletal weight is most rapid during the adolescent growth spurt. About 45% of the adult skeletal mass is formed during adolescence, although its growth continues well beyond the adolescent period and into the third decade. All the calcium for the growth of the skeleton must be derived from the diet. The largest gains are made in early adolescence, between about 10-14 years in girls and 12-16 years in boys.

During peak adolescent growth, calcium retention is, on average, about 200mg/day in girls and 300 mg/day in boys. The efficiency of calcium absorption is only around 30% so it is important that the diet supplies an adequate calcium intake to help build the densest bones possible. The achievement of peak bone mass during childhood and adolescence is crucial to reduce the risk of osteoporosis in later years. By eating several servings of dairy products, such as milk, curd and cheese, the recommended calcium intake can be achieved.

As well as a good dietary supply of calcium, other vitamins or minerals, like vitamin D and phosphorous, are needed for building up bones. Physical activity is also essential, particularly weight-bearing exercise, which provides the stimulus to build and retain bone in the body. Activities such as cycling, gymnastics, skating, ball games, dancing and supervised weight training for at least 30-60 minutes a day, three to five times a week can help build bone mass and density. Making the right dietary and lifestyle choices early in life will help young people develop health-promoting behaviors that they can follow throughout life.

## **Importance of breakfast**

Breakfast is important particularly for a school child. It breaks the fast to the sleep hours and prepares a child for problem solving and memory spans in the learning period at school. Children who skip breakfast do not make up nutrient and energy deficits later in the day and tend to perform more poorly on tests of cognition than those who eat breakfast. It is not enough for children to have just a glass of milk. An ideal breakfast should have at least 3-5 foods from the basic five food groups.

**Packed lunches**- The packed lunch is a lunch that is packed in a Tiffin box to be eaten by the child while in school. Packed lunches have become a necessity for school going children. Taking lunch from home needs little efforts, but helps in maintaining good health. Carrying food from home is less expensive more convenient more hygienic and meets the individual requirements.

## **Suggested packed lunches-**

- Vegetable stuffed parantha and curd
- Chapatti, dal and salad
- Dal paratha with green leafy vegetables
- Vegetable pulao, boiled egg/curd and fruit
- Cheese or paneer sandwich and fruit
- Idli, chutney and green salad
- Rice sambhar, and vegetable, buttermilk



## **Points to be considered in planning a packed lunch-**

- The packed lunch should meet one –third daily requirement of energy, protein, fat and other nutrients of the child, to boost concentration and energy for the rest of the school day.
- Try to incorporate five food groups, though the number of dishes may be less.
- By including green leafy vegetables one-third requirement of vitamins and minerals is fulfilled.

- Good quality of protein like milk & its products would improve vegetable protein. Or combination of vegetable proteins cereals and pulses can be given for better utilization.
- Repetitiveness should be avoided in packed lunches. There should be variety.
- It is sensible to have a different food in packed lunch than what one had for breakfast.
- The food should have the correct consistency. Too watery things may leak and too dry food may not be appetizing to the child.
- Containers should be cleaned and dried before packing the food.
- Involve the child in planning, preparing or packing the lunch box.
- Make the lunch simple. Most children eat lunch quickly so that they can spend more time socializing or playing with friends.
- Pack small portions which can be finished during lunch period.

## **Making healthy choices**

As children grow up, they become more independent about choosing their food. Children can be made healthful choices by.

- Being a role model
- Making them plant vegetables or fruit trees (children take pride in eating foods they have grown).
- Taking them to fruits and vegetables market.
- Allowing them to plan the menu with the help of food guide pyramid.
- Encouraging them to cook simple recipes (they are more likely to eat foods they have prepared).
- Pre-portioning can help in preventing over or under eating.

Appreciate when children make healthful food choices

- Stock nutritious ready to eat snacks only at home.

The nutritional requirements of children and adolescence are summarized in Table These guidelines also recommend that individuals limit calories from solid fats (major sources of saturated and trans fatty acids) and added sugars, and reduce sodium intake.

**Table: Nutritional requirements in childhood and adolescence**

Groups	Category/Age	Body weight (Kg)	Energy (Kcal/d)	Protein (g/d)	Fat (g/d)	Calcium (mg/d)	Iron (mg/d)	Zinc (mg/d)	Vit-C (mg/d)
Child	7-9 years	25.1	1690	29.5	30	600	16	8	40
Boys	10-12 years	34.3	2190	39.9	35	800	21	9	40
Girls	10-12 years	35.0	2010	40.4	35	800	27	9	40
Boys	13-15 years	47.6	2750	54.3	45	800	32	11	40
Girls	13-15 years	46.6	2330	51.9	40	800	27	11	40
Boys	16-17 years	55.4	3020	61.5	50	800	28	12	40
Girls	16-17 years	52.1	2440	55.5	35	800	26	12	40

**A sample meal plan**

Meal Timing	Food Item	Amount
<b>Early Morning-</b>	Banana milk shake	1 glass
<b>Packed Tiffin</b>	Dal Parantha Tomato Chutney Seasonal fruit	2 no. 1tsp 1medium size
<b>Lunch</b>	Salad Roti /Rice Dal/Kadhi/Sambhar Beans Buttermilk/Curd	1 Plate 2-3 no. /2-3 ladle 1 bowl 1 bowl 1 glass
<b>Evening Snack</b>	Milk Vegetable poha/ Paushtik laddoo	1 glass 1 bowl
<b>Dinner</b>	Roti /Rice Spinach	2-3 no./2-3 ladle 1 bowl
	Dal/Paneer/Fish/Chicken Dessert	1 bowl 1 bowl
<b>Bed Time</b>	Milk	1 glass

## Factors influencing food and nutrition during adolescence

Friends and families can play a significant role in preventing or stopping early-stage eating disorders by not participating in these types of discussions on the following aspects:

### Body Image

Body image is how and what you think and feel about your body. It includes the picture of your body that you have in your mind, which might or might not match your body's actual shape and size.

A positive or **healthy body image** is feeling happy and satisfied with your body, as well as being comfortable with and accepting the way you look.

A negative or **unhealthy body image** is feeling unhappy with the way you look. People who feel like this often want to change their body size or shape.

A healthy body image is important. When you feel good about your body, you're more likely to have good self-esteem and mental health as well as a balanced attitude to eating and physical activity.

### Peer Pressure

In sociology, a peer group is both a social group and a primary group of people who have similar interests, age, background, or social status. The members of this group are likely to influence the person's beliefs and behaviour

Peers play a large role in the social and emotional development of children and adolescents. Their influence begins at an early age and increases through the teenage years. It is natural, healthy and important for children to have and rely on friends as they grow and mature.

Peers can be positive and supportive. They can help each other develop new skills, or stimulate interest in books, music or extracurricular activities.

However, peers can also have a negative influence. They can encourage each other to skip classes, steal, cheat, use drugs or alcohol, share inappropriate material online, or become involved in other risky behaviors. The majority of teens with substance abuse problems began using drugs or alcohol as a result of peer pressure.



## **Media**

Many foods and drinks that are marketed can contribute too much sodium, sugars or saturated fat to our eating patterns, therefore reading and understanding nutritional information in a packaged food item is important before eating to determine whether it is healthy or unhealthy food.

Children are most vulnerable to the media influence as the celebrities endorse and promote various processed food and beverages through different media channels.



Food marketing can take on many forms, such as:

- branding
- sponsorship of events
- celebrity endorsements
- contests and sales promotions
- social media posts on: Twitter, Pinterest ,Snapchat ,Facebook, Instagram
- product placement/ commercials
- on TV, movies, magazines, social media posts

## **Eating disorders**

**Under Eating** An eating disorder is commonly defined as an all-consuming desire to be thin and/or an intense fear of weight gain. The most common signs of eating disorders among adolescents are distorted view of one's body weight, size or shape; sees self as too fat, even when very underweight.

*Signs of under eating may include:*

- Hiding or discarding food
- Obsessively counting calories and/or grams of fat in the diet
- Denial of feelings of hunger
- Developing rituals around preparing food and eating
- Compulsive or excessive exercise
- Social withdrawal
- Pronounced emotional changes, such as irritability, depression and anxiety

Physical signs of anorexia include rapid or excessive weight loss; feeling cold, tired and weak; thinning hair; absence of menstrual cycles in females; and dizziness or fainting.

Adolescents with anorexia often restrict not only food, but relationships, social activities and pleasurable experiences.

## **Over Eating**

They may typically 'binge and purge' by engaging in uncontrollable episodes of overeating (bingeing) usually followed by compensatory behavior such as: purging through vomiting, use of laxatives, enemas, fasting, or excessive exercise. Eating binges may occur as often as several times a day but are most common in the evening and night hours.

Teenagers with bulimia often go unnoticed due to the ability to maintain a normal body weight.

### **Signs of over eating may include:**

- Eating unusually large amounts of food with no apparent change in weight
- Hiding food or discarded food containers and wrappers
- Excessive exercise or fasting
- Peculiar eating habits or rituals
- Frequent trips to the bathroom after meals
- Inappropriate use of laxatives, diuretics, or other cathartics
- Overachieving and impulsive behaviors
- Frequently clogged showers or toilets

Most of the physical signs and symptoms associated with binge eating disorder are long-term including weight gain (often leading to obesity), high blood pressure, diabetes, irregular menstrual cycle, skin disorders and heart disease.

Similar to bulimia, binge eating disorder is commonly diagnosed if teenagers binge on average.