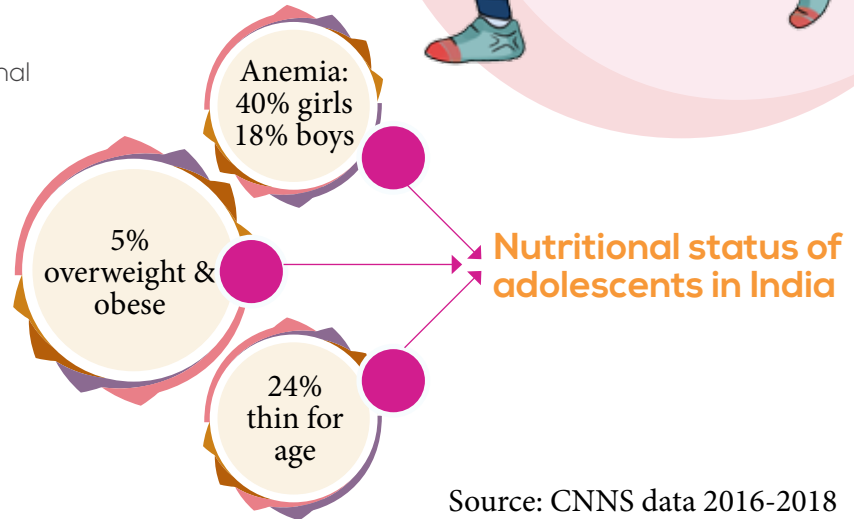


ADOLESCENCE

- Adolescence is the fastest growing stage which marks the onset of puberty
- It is characterized by physical growth, reproductive maturation, cognitive, functional and metabolic transformation
- Physical and lifestyle changes affect nutritional needs and eating habits, respectively
- Adolescent girls are at greater physiological stress because of menstruation
- Maintaining nutritional health is of utmost importance for optimum growth and for preventing future health related problems



Source: CNNS data 2016-2018

Nutrition during adolescence should meet the following objectives:

- To provide adequate nutrition to meet nutrient requirements
- To meet the physical and cognitive growth demands
- To prevent adult onset of diseases e.g ., cardiovascular diseases, diabetes, osteoporosis and cancer



Consequences of inappropriate dietary intakes during adolescence

- Retarded physical growth
- Reduced intellectual capacity
- Delayed sexual maturation
- Increased risk of iron deficiency, undernutrition, stunting, low bone density, eating disorders and obesity
- Lack of concentration, poor learning and school performance

Do's ✓

- ✓ Have 4-5 meals in a day
- ✓ Balanced diet is essential for optimal growth & development
- ✓ Add high protein foods like pulses, legumes, milk & milk products, meats and egg in your daily diet
- ✓ Consume plenty of seasonal fruits (guava, *amla*, mango, papaya), green leafy vegetables like amaranth, fenugreek, mustard leaves; other vegetables like carrot, radish, cauliflower
- ✓ Drink at least six to eight glasses of water daily & plenty of other fluids such as unsweetened fruit juices, lemon water, etc
- ✓ While eating out look for option with whole-grain, fruits & vegetables, lean meat, chicken or fish
- ✓ Eat healthy snacks like *bhuna chana*, *murmura*, *makana*, *chiwra*, raisins
- ✓ Family meals should be encouraged
- ✓ Exposure to sunlight to maintain vitamin D status in your body as it helps in calcium absorption
- ✓ Exercise regularly for 30 minutes at least 5 days in a week of moderate intensity (brisk walking, cycling, dancing & gardening)

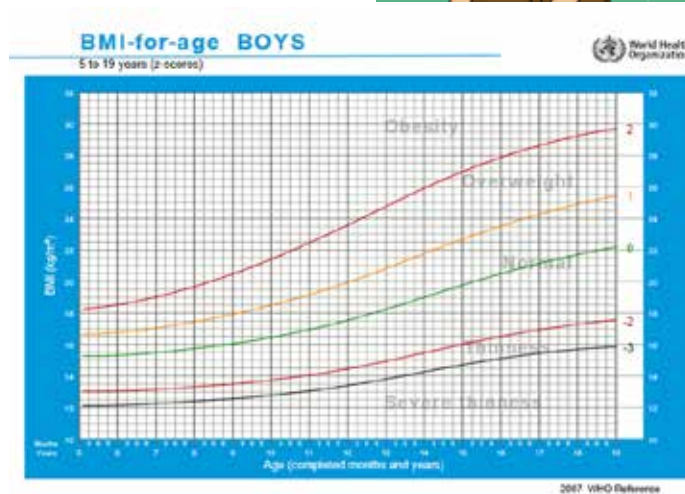
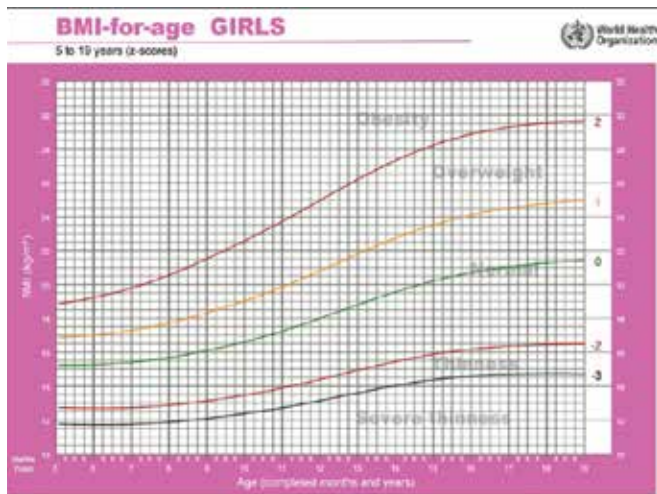
Don'ts ✗

- ✗ Skip meals, especially breakfast
- ✗ Excessive sugar and salt intake through consumption of pastries, cakes, ice-creams, chips, namkeens etc
- ✗ Avoid fast foods, ready to eat foods, fried and salty foods
- ✗ Smoke cigarettes, *hooka*; chew tobacco
- ✗ Avoid drinking alcohol and cold drinks
- ✗ Watch television while having meals



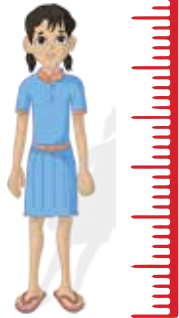
Underweight Among Adolescents

- Underweight means when body weight is less than average expected for one's height, age and gender
- It is a combination measure, therefore, it could occur as a result of wasting, stunting, or both



Causes of Underweight

- Food scarcity
- Inadequate nutrient intake which limits growth
- Wasting in long standing illnesses
- Impaired absorption and metabolism of foods consumed
- Anorexia Nervosa (excessive diet restrictions)



Consequences of Underweight

- Poor growth and development
- Feeling of fatigue or tiredness
- Increases risk of anemia
- Affects their ability to learn and work at maximum productivity
- Increases the risk of poor obstetric outcomes for teen mothers
- Jeopardizes the healthy development of future children

Do's



- ✓ Gain weight gradually (approximately 1/2kg to 1 kg/week)
- ✓ Increase the number of meals and the amount of food at each meal
- ✓ Eat foods rich in energy such as whole wheat, rice, *bajra*, vegetable oils and sugars (honey, jaggery) in your daily diet
- ✓ Include high energy and nutrient dense foods such as nuts, oilseeds and dry fruits in your diet
- ✓ Make diet more nutritious by adding variety of foods such as milk and milk products, pulses, meat products, seasonal fruits and vegetables
- ✓ Include high energy and protein rich beverages like milk shakes and *lassi* either in between meals or during meals
- ✓ Eat a variety of foods to make the meals more interesting such as cereal/pulse *halwa*, *paushtik poha*, sweet *dalia*, *channa dal chikki*, *bajra mathri*, sago cutlet, *paneer kathi* roll
- ✓ Avoid excessive exercise as it will lead to further weight loss
- ✓ Parents should communicate with adolescents to identify any behavior change related to eating disorders (Anorexia Nervosa or Bulimia Nervosa)

Don'ts



- ✗ Excessive use of butter, *ghee* and sugar as it may lead to other health problems
- ✗ Ready to eat fast foods and fried foods
- ✗ Consume food prepared in *Vanaspati*
- ✗ Skip meals
- ✗ Excessive food restriction



Obesity Among Adolescents

- Obesity is excessive body fat
- The proportion of adolescents who are overweight or obese is rapidly increasing worldwide
- Adolescence is a vulnerable period for the development of obesity and also appears to be a critical period for establishing risk factors for some chronic diseases in adulthood



Causes of obesity

- Increasing portion size
- Unhealthy diets and eating out pattern
- Physical Inactivity
- Genetics/ family history
- Hormonal Changes
- Medications (steroids)
- Psychological disorders

Consequences of obesity

- Body image consciousness
- Low self-esteem
- Reduced immunity
- Irregular menstrual cycle/Polycystic Ovarian Syndrome (PCOS) among girls
- Sleep disorders
- High risk for early onset of non-communicable diseases like type 2 diabetes mellitus, hypertension etc
- Asthma/lung disease



Do's



- ✓ Choose a smaller plate, small portion sizes and eat small & frequent meals
- ✓ Plan your meals in advance
- ✓ Eat foods high in fiber such as whole grains and pulses (wheat flour, *bajra*, *ragi*, Bengal gram whole, green gram whole), fruits & green leafy vegetables
- ✓ Choose low fat dairy products (double toned milk/skim milk) & lean meats (chicken/fish/egg whites)
- ✓ Use healthy oils like mustard oil, rice bran oil, olive oil, sesame oil for cooking
- ✓ At snack time, substitute high fat and sugar foods with healthier choices like vegetable *upma/poha*, sprouts *chaat*, vegetable *tikki*, *dhokla* etc
- ✓ Drink low calorie beverages like coconut water, lemon water. Choose whole fruits over juices
- ✓ Healthier cooking methods should be preferred like steaming, baking, roasting and grilling
- ✓ Exercise regularly for 30 minutes at least 5 days in a week of moderate intensity (brisk walking, cycling, dancing and gardening)
- ✓ Monitor your weight regularly

Don'ts



- ✗ Consume high fat and sugar fast/junk foods like burgers, pizzas, cakes, chocolates, pies, *samosa*, patties etc
- ✗ Fried foods, red meats, refined cereals, sugars, honey in excessive amount
- ✗ Butter, *ghee*, *vanaspati* and animal fat in excessive amount
- ✗ Tobacco, alcohol and drug abuse
- ✗ Skip meals especially breakfast
- ✗ Fast or feast
- ✗ Purge after having a meal
- ✗ Have meals while watching television, computers or mobiles

Anemia Among Adolescents

- Anemia is a deficiency in the size or number of red blood cells (RBCs) or the amount of hemoglobin they contain.
- It limits the exchange of oxygen and carbon dioxide between cells.

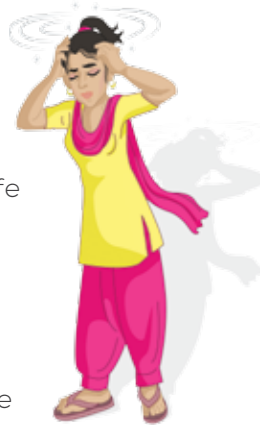


Hemoglobin levels to diagnose anemia in school-going adolescents (g/dl)

Age Group	No Anemia	Mild	Moderate	Severe
Children 12-14 years of age	12	11-11.9	8-10.9	< 8
Non-pregnant women (15 years of age and above)	12	11-11.9	8-10.9	< 8
Men (15 years of age and above)	13	11-12.9	8-10.9	< 8

Causes of Anemia

- Insufficient dietary intake of iron-rich foods and “iron enhancers” (that increase iron availability in body) like vitamin C rich foods (citrus fruits, guava, lemon etc.)
- Increased iron requirements for growth
- Excess loss of blood through an injury or during menstruation
- Iron loss due to infection (Tuberculosis, HIV etc.), parasites (malaria) and intestinal worms
- Poor environmental sanitation and unsafe drinking water
- Poor iron and folic acid stores from infancy, childhood deficiencies and adolescent anemia
- Diet deficient in Vitamin B₁₂, dietary folate
- Genetic abnormalities such as – sickle cell anemia and thalassemia



Consequences of Anemia

- Impaired growth and development
- Impaired motor and neural development, and cognitive function
- Reduced ability to concentrate and learn
- Reduced work capacity and output
- Diminished immune response and reduced resistance to infection
- Poor weight gain
- Irregular menstruation
- Produces behavior alteration
- Negatively affect bone mass (bone protective effects)
- Anemic adolescent girl has high risk of premature birth, low birth weight, and perinatal mortality after pregnancy



Do's ✓

- ✓ Eat variety of foods to make it more nutritious
- ✓ Eat foods rich in iron such as green leafy vegetables (mustard (*sarson*), fenugreek (*methi*), *bathua*); whole grains (whole wheat flour (*atta*), *bajra*, *jowar*); whole pulses (soyabean, *rajma*, red gram dal (*arhar*))
- ✓ Eat organ meat, lean meat, egg, chicken and fish as they contain iron which is easily absorbed in body
- ✓ Always consume Vitamin C rich foods such as lemon, *amla*, sprouts along with or after eating iron rich meals to increase iron absorption
- ✓ Incorporate iron rich nuts and oil seeds such as white sesame seeds, grey niger seeds (*ramtil*), etc
- ✓ Use double fortified salt containing iron and iodine
- ✓ Consume weekly, 1 Iron and Folic Acid tablet each tablet containing 60 mg elemental iron + 500µg Folic Acid, sugar-coated, blue colour
- ✓ Deworming dose should be consumed biannually (400mg albendazole -1 tablet)

Don'ts ✗

- ✗ Consume excess of tea, coffee, cocoa with meals as they inhibit iron absorption in the body
- ✗ Consume high fibre foods
- ✗ Unhygienic water and food
- ✗ Caffeinated drinks like cold drinks
- ✗ Alcohol and tobacco
- ✗ Consume foods rich in calcium such as milk and milk products with iron rich meals as they inhibit each others absorption



Eating disorders in adolescents

- Negative body image is very common during adolescence, especially among girls. It is highly evident among the teen adolescents. A negative body image may lead to the risk of eating disorders such as anorexia nervosa, bulimia nervosa and other maladapted behaviors accompanied with other symptoms such as anxiety and depression
- These disorders can affect a person's physical and mental health; in some cases, they can be life-threatening. Adolescents with eating disorders may experience loss of muscle mass, body fat and bone mineral density
- But eating disorders can be treated. The evaluation of nutritional disturbances in adolescents with eating disorders should be taken into account with specific nutritional requirements in context of pubertal development and activity level



	Anorexia Nervosa	Bulimia Nervosa
Definition	Voluntary self-starvation resulting in emaciation	Recurrent episodes of binge eating followed by one or more inappropriate compensatory behaviors (self-induced vomiting, laxative misuse, diuretic misuse, compulsive exercise, or fasting) to prevent weight gain

