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Nutritional Needs of Adolescents and Anaemia

Handout VI

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Growth and Development in Adolescence

Adolescence is a significant period for physical growth and sexual maturation. Nutrition being an important determinant of physical growth of adolescents is an important area that needs attention. Growth retardation is one of the most important health concerns for adolescents and their parents as well as health care workers.

Inadequate nutritional intake during adolescence can have serious consequences throughout the reproductive years and beyond. Poor nutrition during adolescence can impair the work capacity and productivity of adolescent boys and girls in their later years. Further, an undernourished girl is at the risk of developing complications during pregnancy and the chances of her giving birth to a low birth weight baby increases, thus perpetuating a vicious cycle of malnutrition and ill-health.

Major components of food

Major components of food include protein, fats, carbohydrates, minerals and vitamins which perform different functions.

Function of various food components

- Proteins are of greatest importance in nutrition. Proteins are required for bodybuilding and help in repair and maintenance of body tissues.
- Fats are high-energy foods and a source of energy. They also make the food more palatable and provide fat-soluble vitamins.
- Carbohydrates form the major component of most diets and are the main source of energy.
- Vitamins and minerals are required in small quantities. They do not yield energy but enable the body to use other nutrients and also play an important role in growth, repair and regulation of vital body functions.
- Requirements for iron and calcium are particularly increased in adolescence.
 - Calcium needs during adolescence are greater than they are in either childhood or adulthood because of rapid increase in lean body mass and skeletal growth
 - Zinc is especially important in adolescence because of its role in growth and sexual maturation. Some sources of zinc are grains, nuts, meat, cheese and milk.

Balanced Diet

A balanced diet is one that provides all nutrients (carbohydrates, proteins, fats, vitamins and minerals) in required amounts and proportions for maintaining health and general well-being and also makes a small provision for extra nutrients to withstand short duration of leanness. It can be achieved through a blend of four basic food groups, i.e. carbohydrates, proteins, fats, vitamins and minerals. As these are present in different types of food items like dals, chapati or rice, green vegetables, easily available fruits and milk it is important to eat these food items in the right mix everyday.

Recommended Dietary Allowance of Nutrients for adolescents in 24 hours						
	MALE			FEMALE		
	10-12 Yr	13-15 Yr	16-18 Yr	10-12 Yr	13-15 Yr	16-18 Yr
Energy (Kcal)	2200	2500	2700	2000	2100	2100
Protein (gms)	54	70	78	57	65	63
Calcium (Mg)	600	600	500	600	600	500
Iron (Mg)	34	41	50	19	28	30

Source: ICMR (1998)

Eating right and nutritious food during adolescence

- Helps in achieving rapid growth and full growth potential
- Helps in timely sexual maturation
- Ensures adequate calcium deposition in the bones and helps in achieving normal bone strength
- Establishes good eating habits and sets the tone for a lifetime of healthy eating. This prevents obesity, osteoporosis (weak bones due to deficiency of calcium), and diabetes in later life.

Young girls who have inadequate nutrition do not grow well and become stunted women. Adolescent girls often suffer from anaemia because of poor consumption of iron rich foods and also due to worm infestation and frequent infections. Because of severe malnutrition and repeated illness, the growth spurt in early adolescence does not occur and a slower and prolonged pubertal growth period is seen in adolescents from lower socio-economic status. Hence, any damage to the body physiology during adolescence, which places extra nutritional demand on the body, like early pregnancy, is detrimental as growth this still to be attained. Adolescent mothers are more likely to deliver low birth babies. Due to poor milk production the infant may not be able to gain enough weight and remain malnourished. If these babies are girls, they are likely to continue the cycle by being stunted in adulthood, and so on, if something is not done to break this cycle. Support is needed for nutrition at all stages - infancy, childhood, adolescence and adulthood.

Balanced Diet



Nutritional Anaemia

The need for iron increases with rapid growth and expansion of blood volume and muscle mass. As boys gain lean body mass at a faster rate than girls, they require more iron than girls. The onset of menstruation imposes additional needs for girls. Adolescents should be encouraged to consume iron rich foods (green leafy vegetables, jaggery, meat) complemented with a Vitamin C source like Citrus fruits (oranges, lemon) and Indian gooseberry (Amla). Adolescent girls need additional requirement of Iron to compensate for menstrual blood loss.

Iron deficiency in diet leads to nutritional anaemia.

What is anaemia?

Our blood contains a red pigment called haemoglobin, which carries oxygen and is rich in iron. Anaemia is the loss of oxygen carrying capacity of the blood due to deficiency of haemoglobin in the red blood cells.

Iron deficiency anaemia is a major nutritional problem in adolescent boys and girls in India. The ill effects of anaemia can be seen as:

- Reduced capacity to work and thus decreased productivity
- Increased risk to pregnant girls/women. (In India, 20-40% of maternal deaths are due to anaemia).
- Anaemia may increase susceptibility to infections by impairing the immune functions.

How can anaemia be prevented?

Anaemia can be managed through proper diet and iron supplementation. To prevent anaemia, increase the intake of green leafy vegetables and fruits. If an adolescent looks pale, fatigued or listless and anaemia is suspected, refer to the nearest PHC. Anaemia is treated by giving iron and folic acid tablets on a daily basis till 2-3 months after haemoglobin levels have returned to normal.

Other deficiency states

- Inadequate nutrition during adolescence can potentially retard growth so that the adolescent remains short and thin. The full height potential may not be reached and the adolescent may remain stunted. The sexual maturation may be delayed with late onset of puberty. Poor nutrition impairs work capacity and the boy/girl may feel tired all the time.
- Zinc deficient diet results in growth failure and delayed sexual maturation.
- Iodine deficiency leads to a much wider spectrum of disorders commencing with intrauterine life and extending through childhood to adulthood with serious health and social implications. Iodine deficiency disorders include mental deficiency impaired mental functions, neurological defects, increased stillbirths, and perinatal and infant mortality.

Annexure 1: Case Study Session 3, Activity 1

Case Study 1

Sheela

Sheela is a 15-year-old girl. Her family comprises of her parents, two brothers and a younger sister. Sheela goes to school and also helps her mother with all the household work. Her normal diet is made up of rice and watery dal twice a day. Vegetables are cooked once a while. As per the social custom in her family, Sheela and her sister eat after her father and brothers have eaten. Two months back, she suffered from malaria and since then has been feeling very weak and is always exhausted. She was brought to the PHC after she fainted on her way to school one day.

Discuss:

1. What do you think has happened to Sheela?
2. How can her condition affect her future?
3. How can you help Sheela?

Case Study 2

Raju

Raju is 14 year old and lives in a village. Every morning he goes barefoot to the fields to defaecate.

He has upset stomach most of the times and passes loose motions

He dislikes vegetables, dal etc. and eats only rice with sugar everyday. He also likes to eat chat/pakori sold in the market.

He is feeling very weak and low since last 15 days.

His mother brings Raju to you.

Discuss:

1. What do you think has happened to Raju?
2. What investigations are required?
3. How will you counsel/treat him?