

CHAPTER 6

NUTRITIONAL PROBLEMS IN ADOLESCENTS

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INTRODUCTION

India is home to 253 million adolescents (10 to 19 years) and stand with them at a crossroad between losing out on the potential of a generation and nurturing them to transform society. Adolescence is a nutritionally vulnerable time when rapid physical growth increases nutrient demands. Dietary behaviours established in adolescence may contribute to nutrition-related problems that have consequences for long-term health. This review explores nutritional problems during adolescents – underweight, overweight and obesity and micronutrient deficiencies.

Nutritional Problems in Adolescents

Adolescence is a time of transition when habits are formed that persist into adult life. Good habits, such as exercise and a healthy diet, are likely to bring many benefits, including improved performance in school (Doku et al., 2013). Nutritional habits are important, with high intake of processed, energy-dense foods, high BMI, and iron deficiency among the top 20 risk factors of disability-adjusted life years (DALYs) worldwide (WHO 2009). Such factors pose risks for later-life noncommunicable diseases, which are responsible for two of every three deaths globally (Sawyer et al., 2012).

The available studies suggest that adolescents are becoming more independent in their food choices, more likely to be influenced by their peers, and less likely to pick healthy foods

(Seymour, Hoerr, and Huang 1997). Other factors that affect their overall nutrition include the kinds of foods available at home, amount of time available to make food (Venter et al., 2010), knowledge of food content (Li et al., 2008), and ability to purchase snacks (Ahmed et al., 2006). Sociodemographic, behavioral, and environmental factors are also linked to different patterns of adolescent nutrition. Sociodemographic factors include socioeconomic status, age, sex, location, and degree of urbanization. Behavioral factors include patterns of beverage intake, portion sizes, and dieting, family dinners, eating in front of and viewing television, and skipping meals (especially breakfast).

Malnutrition implies to both extremes, under-nutrition on one side and over-nutrition on the other, causes a great deal of physical and emotional suffering and it is a violation of a child's human rights. They both increase the vulnerability of a child to a variety of diseases in later life.

UNDER NUTRITION

Statistics on under nutrition—including wasting, stunting, anemia, and vitamin A deficiency—in children younger than age five years are well known, but data on under nutrition specifically in adolescents are rare. In the least developed countries, the prevalence of adolescent underweight is 22 percent (UNICEF 2014) and is associated with various health risks. Under nutrition is linked to lower gut immunity, decreased protective secretions, and low innate and acquired immunity.

Undernourished adolescents have commonly experienced stunted growth in childhood. Under nutrition in early life can result in fewer pancreatic cells that produce insulin. Although this deficit is compensated for in adolescence, with stunted adolescents having more peripheral insulin receptors, this compensation contributes to increased accumulation of fat. Stunted children, adolescents, and adults have higher rates of later arterial hypertension. Under nutrition in childhood and adolescence also results in constant physiologic and psychologic stress, increasing the production of stress hormones that weaken the body and decreasing the production of thyroid hormones and insulin-like growth factor that regulate growth.

OVERWEIGHT AND OBESITY

Obesity and overweight are consequences of excess food intake, often combined with genetic factors. Childhood obesity and overweight have been linked to severe obesity in adulthood, with a stronger effect on men. Being overweight as an adolescent is strongly associated with



obesity as an adult .In Sub-Saharan Africa, being overweight as a child has been linked to significant morbidity and mortality as an adult, with higher BMI associated with type 2 diabetes, hypertension, coronary heart disease (although this effect is not independent of the effect of high adult BMI), asthma, polycystic ovary syndrome, and premature mortality.

Declining physical activity may also be a factor in increasing childhood overweight and obesity. In 85 countries, no more than 50 percent of boys or girls participated in 60 minutes or more of physical activity per day, with the Middle East and North Africa having the lowest ratios for girls.

MICRONUTRIENT DEFICIENCIES

Adolescents need more nutrients than adults because they gain at least 40 percent of their adult weight and 15 percent of their adult height during this period. Inadequate intake can lead to delayed sexual development and slower linear growth.

Cognitive growth also depends on micronutrients; B complex vitamins are important in neural communication, and their absence leads to depression. Vitamin B12, folate, and thiamine are important for neural pathways, and deficiency has been linked to impaired episodic memory and language issues. Iron is required for oligodendrocyte growth and neurotransmitter production, and deficiency affects cognition, memory, and social and motor development.

Iodine is involved in structural development, and its absence causes mental retardation. Zinc is found in the forebrain and hippocampus, and its deficiency is linked to impaired attention, learning, and memory, as well as to possible development of neuropsychological diseases.

Many children and adolescents have a micronutrient-deficient diet, and appropriate nutrient supplements are needed. Nutrients can be provided via tablets, powders sprinkled on food or mixed in water, and fortified spreads or snacks. Such foods need to have adequate amounts of

energy and micronutrients, taste good, be clean and hygienic, and have a long shelf life .There is some indication that supplementation is helpful for healthy children. Multiple-micronutrient supplementation has been associated with a marginal increase in fluid intelligence and improved academic performance; however, more research is needed.

CONCLUSION

In India, adolescents and young people aged 10-19 years, account for nearly one quarter of the total population. They deserve much needed attention as they hold the key to breaking entrenched cycles of poverty, inequity and deprivation. Appropriate nutrition during adolescence is important for the increased demands of growth and pubertal development and to decrease the risk of future chronic disease. Adolescents may be at risk for both nutritional deficits and excesses.

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