

INTRODUCTION

Adequate intake of all the essential nutrients through a well formulated balanced diet is needed to maintain good health. Nutrition plays an important role right from the time of the baby's presence in the mother's womb till he/she reaches old age. A balanced diet prevents all the adverse effects of nutritional deficiencies and also ensures optimal growth and development. It also minimizes the risk of diet related non-communicable diseases (DR-NCDs) occurring in later life. Sound optimal nutritional status of mother and child during the first 1000 days of life, starting from the conception till the child completes two years of age is closely linked to growth and learning in the initial stages of development and to the reduced risk of metabolic syndrome, diabetes and cardiovascular diseases later in life. Appropriate dietary habits and physical activity through all the stages of one's life are essential for the maintenance of holistic health.

A balanced diet fulfils all the nutritional needs of the body. There is no single food which can provide all the necessary nutrients and hence these need to be obtained through a judicious choice of a variety of foods. Such diets also provide a host of other bioactive substances and phytonutrients and thus exert a positive impact on health. Appropriate dietary habits promote optimal growth and development and prevent malnutrition occurring in all its forms—undernutrition, micronutrient deficiencies, overweight, obesity (including abdominal/central obesity) and DR-NCDs.

For ease of understanding, it would be appropriate to talk in terms of foods and food groups instead of specific nutrients. The guidelines focus on food-based approach for attaining optimal nutrition and represent the recommended amounts of nutrients that should be consumed through food. Food-related approaches are presented in both qualitative and quantitative terms. Emphasis has been laid on the recommendations which can maximize protective effects in accordance with traditional habits. The guidelines have taken into consideration food groups and food items derived from

common Indian diets such as whole grains, pulses, milk, vegetables and fruits to facilitate diet-related decision making. In order to capture the diverse cultural, culinary practices and food groups that exist in the country, the current guidelines categorizes foods into ten different food groups. Various kinds of cereals and millets are used as staple foods in the country alongside a variety of pulses. All those foods, which are accessible as well as affordable by the common man, have been recommended for the formulation of healthy diets.

The 17 dietary guidelines place firm emphasis on health promotion and disease prevention across all age groups, with special attention to the nutritionally-vulnerable segments like infants, children, adolescents, pregnant and lactating women and the elderly. The key-points pertaining to each of the guidelines discussed have been included at the end of each chapter. They also underscore the role of other related factors like physical activity, health care, safe water supply, environmental sanitation, personal hygiene and other socio-economic factors, which greatly impact nutrition and health outcomes. The use of dietary guidelines may require adaptation to social, economic, agricultural and other environmental conditions. The guidelines contain in them scientific evidence-based information that would facilitate the attainment of the goals stated in the National Nutrition Policy. The guidelines are also consistent with the goals set in the National Policies on Agriculture and Health.

These guidelines are meant for the benefit of the general population and for practicing nutritionists, dietitians, health professionals and other stakeholders. The translation of knowledge into action calls for the coordinated efforts of several government and non-government organizations as well as the academic world. The Dietary Guidelines need to be widely disseminated among the masses through effective information, education and communication (IEC) strategies and other large-scale behavior change communication (BCC) campaigns for improving the knowledge, attitudes and practices of all the stakeholders.

CURRENT DIET AND NUTRITION SCENARIO

In India, severe forms of undernutrition such as marasmus, kwashiorkor and keratomalacia have largely disappeared, yet subclinical manifestations of undernutrition and anaemia persist as public health issues. A significant proportion of children suffer impaired nutritional status. Concurrently, there is a rising prevalence of overweight and obesity in several states, creating a dual burden of malnutrition where both undernutrition and overweight/obesity coexist within the same communities and even within households (Tables I & II).

Estimates show that 56.4% of total disease burden in India is due to unhealthy diets. Healthy diets and physical activity can reduce a substantial proportion of coronary heart disease (CHD) and hypertension (HTN) and prevent upto 80% of type 2 diabetes. A significant proportion of premature deaths can be averted by following a healthy lifestyle.

Data from the Comprehensive National Nutrition Survey 2019 (CNNS) highlights that a substantial number of children, exhibit early indications of non-communicable disease (NCD) and its related risk factors like diabetes and hypertension. The presence of altered metabolic biomarkers in over half of the undernourished and normal-weight children and adolescents (Table II) raises significant public health concerns.

Furthermore, the upsurge in the consumption of highly processed foods laden with sugars and fats, coupled with reduced physical activity and the limited access to diverse foods, exacerbate micronutrient deficiencies and the overweight/obesity problems. Research indicates that unhealthy, highly processed, high-fat, sugar and salt (HFSS) foods have become more affordable and accessible than the healthier alternatives. Aggressive advertising and marketing of these unhealthy foods through different media channels, including social media, are seen to influence dietary preferences among both children and adults, leading to

detrimental long-term effects. A large chunk of family income is spent on buying such unhealthy foods. This faulty dietary pattern contributes to deficiencies in iron and folic acid, resulting in anemia and in the higher prevalence of overweight and obesity among population groups.

Addressing the issue of anemia necessitates the adoption of the practice of dietary diversification among people and undertaking of measures to counter non-nutritional contributors. Placing emphasis on eating a variety of foods also aids in tackling the problem of overweight and obesity.

Table I. Nutritional status and serum biomarkers of children aged 1 to 19 years

Category	Age (years)		
	1–4	5–9	10–19
Anemia (%)	40.6	23.5	28.4
Micronutrient deficiencies			
Iron deficiency (%)	32.1	17.0	21.5
Folate deficiency (%)	23.4	28.2	36.7
Vitamin B12 deficiency (%)	13.8	17.2	30.9
Vitamin A deficiency (%)	17.5	21.5	15.6
25 Hydroxy vitamin D (%)	13.7	18.2	23.9
Zinc deficiency (%)	19.0	16.8	31.7
Non-communicable diseases			
Overweight (%)	-	3.7	4.9
Obesity (%)	-	1.3	1.1
Pre-Diabetes (%)	-	10.3	10.4
Diabetes (%)	-	1.2	0.6
Elevated HbA1c (>5.8 & <=6.4%)	-	9.2	9.5
Elevated HbA1c (>6.4%)	-	0.1	0.2
High total cholesterol (%)	-	3.2	3.7
High LDL (%)	-	3.3	3.8
Low LDL (%)	-	26.1	28.2
High triglycerides (%)	-	34.0	16.1
High serum creatinine (%)	-	7.0	6.6
Hypertension (%)	-	-	4.9

(CNNS, 2019)

Table II. Undernutrition, overweight/obesity (WHO-Asian Cut-Offs), hypertension and diabetes among 18–69 year adults in India as per NFHS 5, 2021

Nutritional status/NCDs	Men		Women	
	2016	2021	2016	2021
CED	23.8	16.2	23.0	18.7
Overweight/obesity	21.9	22.9	28.7	24.0
Hypertension	20.2	24.0	15.3	21.3
Diabetes (Type 2)	10.5	15.6	9.7	13.5
Abdominal obesity (as per NNMB)	55.5	47.7	63.5	56.7

CED: Chronic energy deficiency or undernutrition among adults

The ICMR-NIN, 'My Plate for the Day' recommends sourcing of macronutrients and micronutrients from a minimum of eight food groups, with vegetables, fruits, green leafy vegetables, roots and tubers forming essentially half the plate of the recommended foods per day. The other major portion is occupied by cereals and millets, followed by pulses, flesh foods, eggs, nuts, oil seeds and milk/curd. Intake of cereals should be limited to 45% of the total energy, while for pulses, eggs and flesh foods, the total energy percentage should be around 14% to 15%; total fat intake should be less than or equal to 30% energy, while nuts, oilseeds, milk and milk products should contribute to 8%–10% of total energy per day respectively.

However, as per the data, cereals contribute to 50% to 70% of total energy per day. Pulses, meat, poultry and fish together contribute to 6% to 9% of the total energy per day as against the recommended intake level of 14% of total energy from these foods.

In a large segment of the country's population, the intake of micronutrient-dense foods (whole grains, pulses, beans, nuts, fresh vegetables, fruits, etc.) is found to be lower than the recommend levels, whereas, the intake of refined cereals is found to be higher. A steady increase in the intake of unhealthy

foods among people complicates the matters further. As a result, majority of the population including children suffer from malnutrition and its adverse health outcomes.

While overall food grain production, especially of cereals, has risen consistently over the past few decades, the per capita availability of food grains indicates adequacy in cereals (464g), with pulses remaining low. Due to the limited availability and high cost of pulses and meat, a significant proportion of the Indian population relies heavily on cereals, resulting in poor intake of essential macronutrients (essential amino acids and essential fatty acids) and micronutrients. Low intake of essential nutrients can disrupt metabolism and increase the risk of insulin resistance and associated disorders from a young age (Table I).

The most logical, sustainable, and long-term solution to all forms of malnutrition is ensuring the availability, accessibility, and affordability of nutrient-rich foods while promoting consumption of diverse foods from various food groups. Dietary guidelines play a pivotal role in guiding individuals toward selecting appropriate foods in adequate quantities across a range of food groups, thereby facilitating optimal nutrition throughout the lifetime.