Eating Right

for a healthy you

ILSI India

International Life Sciences Institute-India

About ILSI-India

International Life Sciences Institute-India

www.ilsi-india.org

ILSI-India is an entity of the International Life Sciences Institute (ILSI), headquartered in Washington DC. ILSIIndia provides scientific inputs and secretariat assistance to the South Asian Region, which includes Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

ILSI-India activities primarily focus on local and regional issues and involve leading national and international experts in the deliberations. ILSIIndia is the leader in the region in focusing attention and devoting resources on critical areas in food and water safety, nutrition, risk assessment, harmonization of food regulations, improvement in the health profile of malnourished children and women, and agriculture sustainability including biotechnology. Special attention is given to the importance of complementary foods and food fortification.

ILSI-India carries out its mission through sponsoring workshops, symposia, conferences, seminars, training programs, research projects, and publications.

ILSI-India works closely with government, industry, research institutions, academia, and international organizations. ILSIIndia's Board of Trustees is comprised of individuals from industry, academia, government and research organizations who bring a range of expertise, experience, and perspective to their work defining and achieving ILSI India's goals. These individuals are unpaid volunteers who take their scientific and fiduciary responsibilities to the organization seriously. They serve on ILSI India's Board of Trustees as individuals and do not represent their employers. Country Committees have been established in the South Asian Region for management of country programs.

Founded in 1978, ILSI is a non-profit, worldwide organization whose mission is to provide science that improves human health and well-being and safeguards the environment. ILSI entities design programs to foster multi-sector collaboration conducting, summarizing, and disseminating science related to the world's most pressing health issues. ILSI strategy encourages global action on identifying and then resolving outstanding scientific questions in four thematic areas that capture the core of ILSI's work:

- **Food Safety**
- **Risk Science and Toxicology**
- **Nutrition and Health**
- **Sustainable Agriculture and Nutrition Security**

These focus areas provide structure for responding to and raising awareness of the pressing issues society faces. They also help elucidate new opportunities for driving scientific progress. ***ILSI's work is guided by its Code of Ethics, Scientific Integrity and Organizational Standards of Conduct.***

ILSI accomplishes this work through its **worldwide network** of ILSI Entities: Argentina, Brasil, Europe, Focal Point in China, India, Japan, Korea, Mesoamerica, Mexico, Middle East, North America, North Andean, South Africa, South Andean, Southeast Asia Region, and Taiwan and Research Foundation. ILSI's scientific publications are duly recognized all over the world. They include the journal *Nutrition Reviews* and the book Present Knowledge in Nutrition. Please visit www.ilsi.org for more information on ILSI and its network.

Eating Right

for a healthy you

International Life Sciences Institute-India

India & South Asian Region

Health Is Wealth

Healthy dietary practices must begin early in life. A **nutritionally adequate diet** is essential during all stages of life so that individuals are active, productive and free of disease. Unhealthy diets are more hazardous than perhaps all other risks factors enhancing risks of death and disability. The issues of under-nutrition (resulting in underweight, stunting, wasting, micronutrient deficiency) and over-nutrition (leading to overweight/ obesity, heart diseases and hypertension, diabetes and some cancers) have to be addressed at individual level and at national level.

Healthy foods should provide adequate energy and nutrients consistent with age, gender, physiological status and physical activity. They should include foods which sustain all essential functions of the body such as growth, development, cognition, bone, gut and eye health and defend against infections.

A diversified diet could include: whole grains or non-glycaemic carbs (like fibre), good quality protein from legumes, pulses and lean meat, eggs (poultry), low fat dairy and their products, plant based oils of unsaturated variety and liberal amounts of fruits and vegetables to provide fibre, micronutrients and phytonutrients. Foods high in fat, salt and sugar should be consumed sparingly. ***Diversified diets with healthy foods are a prescriptive approach for promotion of health and prevention of diseases.***

Physical activity is essential for maintaining energy balance and good health. Do not be a couch potato! Move as much as possible.

Foreword

The diet plays an important role in maintaining health and wellbeing. This has been known from ancient times and "Ayurveda believes-We are what We eat". Globally and nationally the subject of diet and health has been of great interest. It is becoming apparent that intake of judicious diet can help in preventing the occurrence and management of variety of life style diseases particularly cardiovascular diseases, diabetes and even cancer. Proper diet and nutrition is key for the healthy living. Several questions are often asked by Common Man: Are all diets suitable for all ages? How much to eat? What to eat and what should not be eaten in certain disease conditions or altered physiological conditions?

Keeping in view the above, International Life Sciences Institute-India (ILSI-India) set up a Task Force on Healthy Foods chaired by former Chairman of ILSI-India Late Mr. D H Pai Panandiker. The members of the Task Force discussed at length the above issues and addressed the various food groups, special needs of children and aged and diseased persons, and impact of cooking procedures and storage of food quality, particularly its nutritional quality. The Task Force recommended that a monograph be prepared on healthy foods and healthy diets for use by common man. The monograph contains very informative tables for effective reading and understanding. The Monograph has been prepared by Dr. Pulkit Mathur, Assistant Professor, Lady Irwin College and Dr. Kamla Krishnaswamy, Former Director, National Institute of Nutrition (NIN), Hyderabad with valuable inputs from Late Mr. Pai Panandiker. Dr. B. Sesikeran, Former Director, NIN has also provided suggestions. I thank them for the same and also acknowledge the painstaking compilation of the Monograph by Ms. Rekha Sinha, Executive Director, ILSI-India

This Monograph will serve as the guidance documents to those interested in healthy eating and healthy living and all stake holders will find it extremely useful and beneficial.

Prof. P. K. Seth
Chairman
ILSI-India

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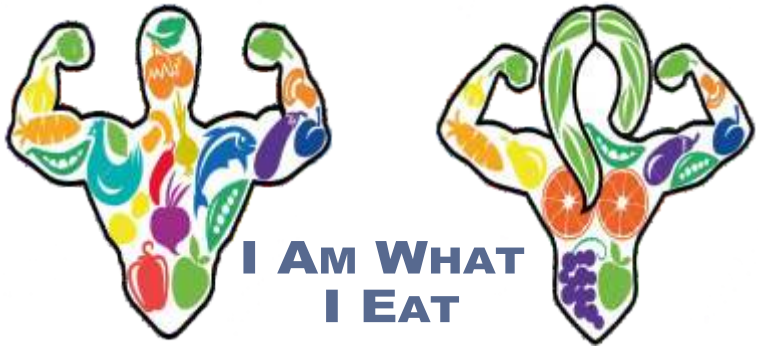
Abbreviations

CVD	Cardiovascular Diseases
DASH	Dietary Approaches to Stop Hypertension
FIFO	First In First Out
FSSAI	Food Safety and Standards Authority of India
ICMR	Indian Council of Medical Research
MoHFW	Ministry of Health and Family Welfare
MUFA	Mono Unsaturated Fatty Acids
NIN	National Institute of Nutrition
RDAs	Recommended Dietary Allowances
T2DM	Type 2 Diabetes Mellitus
TsP	Tea Spoon

1. What Are Healthy Foods And A Healthy Diet?



A healthy diet is one which provides a wide variety of natural foods and promotes long-term health and well-being. Variety and moderation are the two pillars of a healthy diet. Eating all food groups in a day and eating assorted foods from each food group in a week ensures that almost all essential nutrients are being provided in the diet.

Moderation in serving sizes is also important. One needs to eat to 'satisfy one's need and not greed. 'A balancing act is required while choosing foods to eat and the quantities that need to be consumed. **A balanced diet,** hence, is one which contains all the requisite nutrients needed by the body in quantities and proportions that not only satisfy the body's needs for these nutrients but also a little extra kept in reserve to tide over situations when the body does not receive the desired kind or amount of nutrients.

A healthy diet is important throughout the lifecycle – from before a child is conceived, through pregnancy, infancy, childhood, adolescence, adulthood and in old age. **'ANNAM AHAM,' is a Vedic concept which means 'I am what I eat'.** Your body weight, stature and health status are to a large extent determined by your eating habits and lifestyle (which includes physical activity). Making the right food choices goes a long way in determining whether your diet is healthy or not. A healthy diet plays a key role in growth and development, aids all physiological functions, prevents infections and is associated with prevention of several lifestyle-related diseases like heart disease, hypertension, diabetes and some types of cancer. Diet including healthy foods and lifestyle changes can reverse some of the symptoms of these diseases. A healthy diet can enhance productivity, physical stamina, cognition and mental health allowin gone to achieve one's full genetic potential and strengthening the ability to protect our body from illness and disease. Hippocrates' statement **"Let food be thy medicine and medicine be thy food"** very aptly describes this.

Making wise food choices from each food group is important for ensuring that the diet is healthy and nutritious and provides essential nutrients

(carbohydrates, fibre, proteins, fat, vitamins and minerals) and other non-nutrient substances (phytochemicals) which have health promoting properties.

Healthy foods maintain and promote good health. They are less calorie-dense or do not have empty calories (only calories and no other important nutrient in any significant quantity). They mostly consist of unrefined and non-glycaemic-carbohydrates (which do not raise blood sugar rapidly), are less salty, sugary, fatty but have good quality proteins, good fats and/or fiber. They protect organ health, muscle and bone health and are conducive to an active lifestyle. They strengthen the ability to protect our body from illness and disease. Thus, healthy foods are nutrient-dense and are low in fats, sugars, refined starches or sodium.

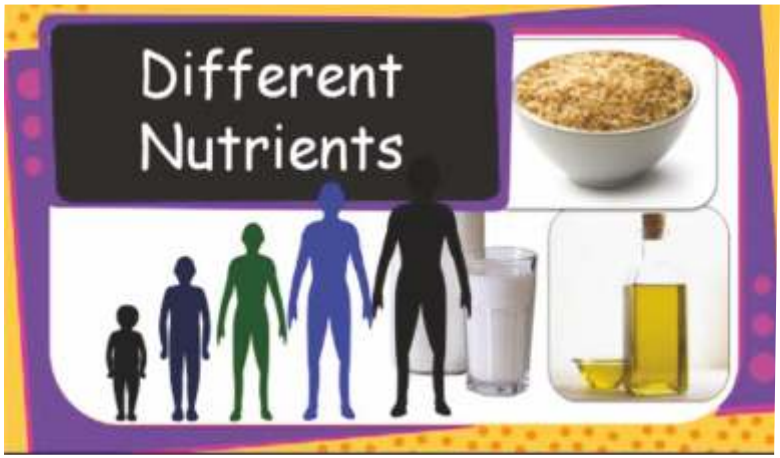
There are neither magic foods nor a set diet plan which will give you all the essential nutrients to stay healthy. Every individual is different and has a different requirement for nutrients according to his or her age, health status and activity pattern.Eating a variety of foods is the best way of ensuring that the body receives all the nutrients according to its needs.

Healthy eating habits and physical activity are as important as a healthy diet in maintaining good health. Meal timings, meal size, meal composition as well as how much and what intensity of physical activity one indulges in are important.

The subsequent sections explain about the different nutrients, their role in the body and foods from which they can be obtained. The sections also discuss good eating habits and how to plan healthy nutritious meals for each age group.

Daily Tips to Help Your Family

2. Which Nutrients Are Important? Which Foods Will Provide These Nutrients?



Nutrients are substances essential for health which the body cannot make or makes in quantities which are not sufficient to maintain health. The chief nutrients required by the body include: carbohydrates, protein, lipids (fat), vitamins and minerals. These nutrients have specific roles to play in our body and lack of any of these in the diet can upset the normal functioning of the body. Water is also a nutrient as 50-60% of our body is made of water. All processes in our body take place in a water based medium. Daily we need to have at least 6-8 glasses of water or fluids, and more if we are indulging in physical activity or in hot weather conditions.A reasonable amount of electrolytes like sodium and potassium are also needed along with water.

Appendix 1 gives the recommended amounts of each kind of nutrients which one needs to consume in a day according to age, gender and activity level. These are referred to as the **Recommended Dietary Allowances (RDAs)** and are sufficient to meet the needs of nearly all individuals (about 98%) in a life stage**.** Table 1 highlights the various nutrients needed by our body, the role they play in the body as well as the foods in which they are present in sufficient quantities. The RDAs are laid down by Indian Council of Medical Research, Ministry of Health and family Welfare, Government of India. RDAs are revised from time to time and can be accessed from: www.ninindia.org.

Table1: Functions and Rich Food Sources of Different Nutrients

Nutrient	Why it's important for you	Which foods you can get it from
Protein	Tissue building, part of every cell of body, needed for providing immunity, making enzymes and hormones which regulate body function.	Meat, fish, poultry, eggs, milk, milk products, beans and pulses, nuts and oilseeds
Fat	Source of energy, part of cell structure, provides insulation, padding, lubrication in body, needed for absorption of fat soluble vitamins.	Butter, ghee, cooking oil, cream, nuts and oilseeds
Carbohydrates	Source of energy. .	Cereals, pulses,starchy vegetables like potato, colocasia, yam, sweet potato
Fiber	Helps in digestion,prevents constipation, protects against colon cancer andIrritable Bowel Syndrome, lowers blood sugar, triglyceride and cholesterol.	Green leafy and other vegetables, fruits, whole grains, pulses, black gram, beans, soy products
Calcium	Important for development and maintenance of teeth and bones, smooth functioning of muscles and nerves, maintains normal blood clotting.	Milk and milk products, cereal grains (especially *ragi*), pulses, green leafy vegetables, sesame (*til*) seeds
Iron	Prevents anaemia, required for carrying oxygen to parts of the body, important for muscle function and builds immunity.	Meat muscle, organ meat, poultry, egg, soybean and other pulses, dark green leafy vegetables
Zinc	Growth, development, immunity.	Seafood, meats, whole grains, nuts, legumes
Iodine	Required for production of thyroid hormones which control several body processes.	Iodised salt, seaweed, seafood
Selenium	Promotes antioxidant action, part of enzymes, builds immunity.	Meat, eggs, seafood, whole grains, nuts
Vitamin A	Needed for normal vision, skin health, bone health immunity, acts as antioxidant and promotes growth and development.	Orange and yellow fleshed vegetables and fruits, dark green leafy vegetables, liver, fish oils, egg yolk
Vitamin D	Essential for bone health, maintenance and growth, helps in absorption and utilisation of calcium.	Fish liver oils, egg yolk, liver, fish, butter, mushrooms, and other fortified foods like milk, fat/oil
Vitamin E	As an antioxidant, protects against cancer and heart disease.	Vegetable oils – corn, soybean, cottonseed, safflower, wheat germ, peanuts, whole grains, nuts and seeds

Vitamin K	Helps with normal blood clotting and bone health.	Liver, pork, cauliflower, broccoli, peas, green beans and green leafy vegetables
Thiamin	Part of enzymes which helps in energy metabolism and nerve health.	Whole cereal grains and products, sunflower seeds, yeast, legumes, pork, peanuts, mushrooms, liver, eggs, green beans, green peas
Riboflavin	Part of enzymes which helps in metabolism of nutrients, antioxidant action.	Milk and milk products like curd, cottage cheese, cheese, etc, eggs, meat, liver, legumes, nuts, mushroom, spinach and other green leafy vegetables, broccoli
Niacin	Part of enzymes which help in energy metabolism.	Most protein foods are also good sources of niacin e.g. whole cereals, pulses, peanuts, meat, chicken, fish, mushrooms
Pyridoxine	Part of enzymes which help in metabolism of nutrients, gene action.	Meat, fish, poultry, nuts, pulses and whole grains, bananas, spinach, potatoes and sunflower seeds
Folic acid	Helps with DNA synthesis, cell division, maturation of red blood cells and nerve health.	Liver, legumes, spinach and other green leafy vegetables, orange and orange juice, wheat germ, broccoli, cabbage, cauliflower
Vitamin B12	Important for nerve health, maturation of red blood cells.	Foods of animal origin like meat, fish, poultry, shellfish, eggs, milk, cheese
Vitamin C	As an antioxidant, helps in iron absorption and building immunity.	Citrus fruits, *amla,* guava, cherry, kiwi fruit, mango, papaya, strawberry, watermelon, honeydew melon, tomato, green peppers, cauliflower, potato, broccoli, lettuce, spinach and other green vegetables

A look at the Table can make planning diets seem very daunting. **How can one plan and make sure that all these nutrients are present in sufficient quantities in our daily diet?** The Table is just a guide for you to track individual nutrients. However, to make sure that all nutrients are included in the daily diet one needs to make wise food choices from the basic food groups.

3. How To Choose Wisely From Each Food Group?

Foods can be grouped into three groups based on how they help our body– energy giving, body building and, regulatory and/or protective foods. Foods from all three food groups must be incorporated not just in the daily diet but in every meal for it to be called a balanced meal. Eating a variety of foods from each food group will ensure that you get most of the nutrients.

Energy Giving Foods

Energy giving foods include: cereals (such as wheat, rice, corn, sorghum, millets such as ragi, bajra etc.), starchy vegetables (like potato, sweet potato, yam etc), sugar, jaggery, honey, butter, ghee, cooking oil. These foods are rich in nutrients like carbohydrates and/or fat. Whole grains (whether intact or products made from these) which retain all three layers namely bran, germ, and endosperm, are healthier than refined grains in which some portion of the grain (usually the outer bran layer or the germ) is missing. This is because the bran and the germ portions are rich in health promoting nutrients like fiber, protein, vitamins and minerals.

- **Whole Grains**

Whole Grains or foods made from them *contain all the essential parts and naturally occurring nutrients of the entire grain seed in their original proportions.* Examples of whole grains include whole wheat, unpolished rice of all colored and non-colored varieties, rye, oats, maize, barley, sorghum/jowar, triticale, millets - *bajra* (pearl millet), *ragi* (finger millet), etc. and whole pseudo cereals like quinoa, buckwheat, amaranth and wild rice.

Whole grains are sources of starch, rich in protein, fibre, B vitamins, vitamin E and minerals. Besides nutrients, whole grains are endowed with phytochemicals (phenolic acids, polyphenols, phytates, alkylresorcinol, phytosterols) which contribute to the observed health benefits.

Studies have shown health benefits associated with whole grains. These include: decrease in risk of cardiovascular diseases (CVD), Type 2 diabetes (T2DM), colorectal cancer, reduction in blood pressure and body weight. At least half of the total

grains eaten in a day should be whole grains. A food product which claims to provide substantial amounts of whole grain must contain at least 8 g of whole grains/per 30-g serving of food. Intact whole grains are better than when broken down into smaller particles. The finer the particles, greater the rise in blood glucose. Prefer grit to fine flour.

- **Sugars**

  Sugar, jaggery, palm sugar and honey are all simple carbohydrates which are to be consumed in moderation. They need very little or no digestion and are rapidly absorbed by the blood. Dishes/beverages incorporating these sugars should also be consumed in moderation. Excess intake of sugars may lead to weight gain, dental caries as well as increase in the risk of diabetes.

- **Butter, Ghee and Cooking Oils**

  Butter, Ghee (clarified butter), and Cooking Oils are fats and need to be consumed in moderation as they are energy dense. Fats from animal sources like milk, cream, butter and ghee are high in saturated fats which are not considered healthy fats.

  Refined oils used for cooking have more of the unsaturated fatty acids (like monounsaturated fatty acids, omega-6 and omega-3 fatty acids) and are better for health. **Omega-3 fatty acids** are good for brain development as well as for heart health. Rich sources of omega-3 fatty acids include fish and fish oils, walnuts, flaxseed, rapeseed, mustard and soybean oils, legumes and green leafy vegetables. Extra virgin olive oil is rich in heart-healthy monounsaturated fats and is very high in antioxidants with great health benefits. Traditional oils such as ground nut/peanut, gingelly (sesame oil) and rice bran are also good sources of monounsaturated fatty acids. Mustard oil is rich in omega 3 fatty acids.

  Omega-6 rich oils like sunflower oil, safflower oil or corn oil should be consumed in moderation and should not be used for deep frying as they spoil faster. Hydrogenated fats like *vanaspati*, margarine and bakery fat, are harmful for the heart and must be avoided.

  There is no single cooking oil or fat which is the best and can be eaten liberally. All fats are concentrated sources of energy and must be consumed in moderate amounts. Using a variety of fats and oils and nuts and seeds in the diet ensures that all the types of fatty acids are consumed. Trans fats, which are used in bakery products (like biscuits, breads, patties, pastries, etc.), oily/fried, fast and snack foods using margarine or hydrogenated vegetable oil for preparation, are best avoided. Trans fats can increase your risk of heart disease or stroke much more than saturated fats. Trans fat intake should be less than 1% of total energy intake. It is suggested that on 1800 calories one must consume less than 2 grams of trans fat/per day.

Body Building Foods

Body Building Foods include those rich in protein like pulses (all dals, rajmah, soyabean, chana, beans, peanuts etc.), nuts (like almonds, walnuts, cashew, etc), milk and milk products (paneer or cottage cheese, cheese, curd etc) and meat, fish, poultry and eggs. These foods need to be incorporated in every meal especially for growing children and pregnant and nursing mothers. Foods from animal sources have good quality proteins which help in building tissues of our body. However, we should take care and include only the low fat or lean varieties of milk and dairy products, meat and poultry in meals, as animal products tend to be high in saturated fat. Pulses should be consumed with cereals to provide good quality protein. Pulses eaten with seed coat (whole pulse/grams) are nutritionally superior having higher amounts of fibre, vitamins and minerals in comparison to pulses where the seed coat has been removed and the grain polished.

Protective and Regulatory Foods

Protective and Regulatory Foods include those which are rich in vitamins, minerals, fibre and plant chemicals (phytochemicals) with health benefits, like fruits and vegetables. They help in smooth functioning of the body as well as protect the body from diseases. The vitamin, mineral and, phytochemical content varies in different fruits and vegetables. Therefore, one need to eat a variety during the week. Dark green leafy vegetables are the healthiest as they are a store house of most vitamins and minerals. They are also packed with the goodness of fibre and phytochemicals. Herbs and spices although eaten in small quantities, provide health promoting substances in the diet. Foods of animal origin can also provide substances with health benefits like fatty fish has omega- 3 fatty acids which are healthy. Further, fermented dairy products have good bacteria which are beneficial for overall health, helping in digestion, gut health and, improving immunity.

- **Vegetables and Fruits – The Naturally Healthy Foods**

Vegetables and fruits are replete with vital nutrients which support health and wellness in myriad ways. At the same time, they are low in calories and fat and do not contain cholesterol. Available in a variety of colors, when cooked in varied styles with herbs and spices they add taste, color and make dishes aesthetically appealing.

What do they contain?

- *A large and ever-growing body of research shows that both vegetables and fruits are power houses of micronutrients, phytonutrients and fiber, which promote and protect the health and well-being. Root vegetables such as carrot, radish, beet root etc. are good for health while tubers such as potato,*

yam and, colocasia can be consumed in small amounts.

- *Fruits and vegetables of different colors - green, yellow-orange, red, blue and purple each have their own combination of phytochemicals and nutrients that work together (synergistically) to promote good health. Phytochemicals stand for a wide variety of compounds produced by plants with beneficial health effects (see Table 2). The common and most useful are antioxidants-flavonoids, flavones, isoflavones, polyphenols, catechins, anthocyanidines, allylsulfides, isothiocyanates and carotenoids. Many phytochemicals are antioxidants and prevent cell damage from free radicals generated during physiological and pathological (disease) processes.*

What do they do?

- *They promote growth and development including cognition and maintain body defences.*
- *They play a role in averting micronutrient deficiencies such as those of carotenoids, vitamins A, E, C, B complexes such as thiamin, riboflavin, niacin, pyridoxine, folic acid, minerals such as iron, calcium, zinc, magnesium, selenium, and chromium to mention a few .*
- *They are also rich in potassium that helps in excreting the excess sodium from the body and helps maintain blood pressure at normal levels.*
- *They are rich sources of iron and folic acid and prevent anaemia. Other nutrients in vegetables / fruits such as riboflavin, pyridoxine, and vitamin A promote blood formation.*
- *They are rich sources of vitamin C prevent scurvy and promote iron absorption*
- *The folates in vegetables/fruits aid in haemoglobin formation and reduce risk of neural tube defects. Pregnant women should take more folic acid.*
- *Calcium rich vegetables are needed for bone health.*
- *They are rich sources of vitamins B complex and are needed for maintaining nerve and brain function and release of energy from foods.*

Vegetables can be consumed raw in the form of salad, or minimally cooked by steaming or sautéing to retain most nutrients. Curries should be prepared with minimal oil and salt. Spices may be added for enhancing flavor. Consuming whole fruits is better than fruit juices because they contain dietary fibers.

Spices, Herbs and Condiments

Spices, Herbs and Condiments like ginger, garlic, turmeric and pepper, besides imparting their special taste to food, have health promoting properties. Bioactive substances in these have different beneficial effects in our body. Garlic for instance has cholesterol reducing properties; ginger and turmeric reduce inflammation, act as antioxidants and have anti-cancer properties; cloves, cinnamon, basil, all have antioxidant properties; cinnamon and, fenugreek seeds have the property to reduce blood glucose and blood cholesterol.

Table 2: Protective Components in Vegetables and Fruits

Protective Component	Attributed Health Benefits	Rich Sources
Allicin, diallyl disulphides, and other sulphur compounds	Antioxidant, antibacterial, lowers cholesterol levels in blood, reduces risk of cancer and heart disease.	Garlic, onion
Anthocyanins	Antioxidant, reduces risk of heart disease and cancer.	Red grapes, red cabbage, cherries,s trawberries
Carotenoids	Antioxidant, reduces risk of heart disease and cancer.	Orange and yellow coloured fruits and vegetables like carrots, papaya, mango, yellow pumpkin
Coumarins	Natural blood thinner, antifungal properties, protects against cancer.	Citrus fruits like lemon, lime, orange, sweet lime, grapefruit, strawberries, apricot
Dithiolthiones	Antioxidants, protect against cancer	Broccoli, cauliflower, brussels sprouts, cabbage
Flavonoids	Antioxidant, reduce inflammation, reduce risk of heart disease and cancer .	Apples, pears, plums, peaches and apricots, strawberries, broccoli, eggplant, tomato, capsicum
Indoles	Reduce risk of cancer.	Broccoli, cauliflower, brussel sprouts, cabbage, turnips
Fiber	Relieves constipation, reduces risk of colon cancer, reduces and controls blood glucose, blood lipid and cholesterol levels.	Beets, broccoli, green beans, turnip, green peas, ladies finger, carrot, apple with peal, pears, figs, citrus fruits, guava and many others
Limonene	Reduces risk of cancer.	Citrus fruits like lemon, lime, orange, sweet lime, grapefruit
Lycopene	Antioxidant, reduces risk of certain cancers and heart disease	Tomatoes, watermelon
Plant sterols	Lower blood cholesterol.	Broccoli, cauliflower, brussel sprouts, dill, apples

The following **features of a healthy dish/snack** will help you select these over less healthier options:

- The quantity of a dish that you eat at a time (one serving) should *not provide too many calories coming from refined carbohydrates like sugar or refined wheat flour (maida) and fat i.e. the food should not have high amounts of sugar or fat especially saturated fat. Calorie content of 40 calories/ 50g of a snack or 120 calories/100g for meals or dishes or less is considered as low in calories. Intake of calorie dense dishes promotes obesity.*
- *A product should be low in trans-fat. To label trans-fat free, a product should contain less than 0.2g of trans-fat per serving.*
- *It has low levels of saturated fat (less than 1.5g/100g food).*
- *It haslow amounts of salt (less than 0.3g/100g food).*
- *It is a source of protein (having at least 12% of energy value of food/100g food).*
- *It has good quality protein which means that it either has a combination of cereal and pulse in its ingredients or milk/milk products, egg or flesh foods (lean meat, fish, poultry).*
- *It is a source of fibre (at least 3g/100g food).*
- *It is a source of some vitamins, minerals and/or phytochemicals(at least 15% of RDA/100g food).*

Composition of foods to identify these features can be seen from recipes of non-packaged foods and, list of ingredients as well as 'nutrition facts panel' of packaged foods.

How Much To Eat?

After understanding what foods to eat comes the next question of how much of each type of food group to eat. If we consider the plate in which we eat our meals like breakfast, lunch and dinner, then approximately half the plate should have fruits and vegetables, one-fourth should have a cereal or cereal product and one-fourth should have a body building food like dal or meat/fish/poultry. In addition, we should have a katorie/cup of milk/curd/paneer. The Harvard Healthy Eating Plate can be seen as a reference https://www.health.harvard.edu/staying-healthy/healthy-eating-plate.

In terms of whether we are eating enough food altogether, can be judged by our weight status. If an adult is neither gaining nor losing weight, the person is in what is called as an 'energy balance.' The person is eating as much energy as he or she is spending. If the body mass index (BMI) of the person is between 18.5 to 22.9 kg/m^2, the person has a normal body weight, which is desirable. Anything below this range is low body weight (undernourishment) and anything above is overweight or obese (over nourishment). Both these states are undesirable. An adult in the normal weight range should ideally neither gain nor lose weight. For Asian Indian adults it is recommended that body mass index be kept between 18.5- 23 kg/m^2 as they have more fat in the body and are at a higher risk of diabetes

and cardiovascular diseases.

World over the **dietary guidelines** prescribe not only a variety of fruits and vegetables but also recommend that we 'fill half our plates with fruits and vegetables' to get as much benefit as possible. The **Dietary Guidelines for Indians** drawn up by National Institute of Nutrition, suggests that 400g/day will be a reasonable intake of which 100g are fruits, 50g are green leafy vegetables, 200g of other vegetables and 50g of roots and tubers. Table 3 shows the major nutrients contributed by normal serving sizes of some foods.

Table 3: Nutrient Contribution by Some Commonly Consumed Foods

Food	Serving Size	Major Nutrients Contributed
Roti (without oil/ghee)	1 (20g wheat flour)	75 Kcal, 2 g protein
Parantha (made with 1 tsp oil)	1 (30g wheat flour)	160 Kcal, 3 g protein
Rice	1 quarter plate (40g)	150 Kcal, 4 g protein
Idli	2 medium size (100g)	115 Kcal, 4 g protein
Upma/Poha	1 quarter plate (100g of food item)	150 Kcal, 4g protein
Dosa, plain	1 large (100g)	210 Kcal, 5g protein
Dal (medium consistency) with 1 tsp oil for seasoning	1 Katorie/bowl (of 200ml capacity)	145 Kcal, 7 g protein
Meat (pan fried in 1 tsp oil)	2 pieces (40g)	125 Kcal, 7 g protein
Egg (boiled)	1 (50g)	80 Kcal, 7 g protein
Milk (cows)	1 glass (of 250 ml capacity)	8g protein, 295 mg calcium
Dark green leafy vegetable saag (sautéed)	1/2 Katorie/bowl (of 200ml capacity)	9934 µg of β carotene (vitamin A)
Carrot	1 Katorie/bowl (of 200ml capacity)	1543 µg of β carotene
Lemon juice	1 lemon	8 mg Vitamin C
Orange	1	45 mg Vitamin C

Amla	1	25 mg Vitamin C
Papaya	1 Katorie/bowl (of 200ml capacity)	231 µg of β carotene, 54 mg Vitamin C
Mango	1 Katorie/bowl (of 200ml capacity)	3185 µg of β carotene
Sugar	1 tsp (5g)	20 Kcal of energy
Oil	1 tsp (5ml)	45 Kcal of energy

* Using values from IFCT 2017; Food Exchange List, Lady Irwin College, 2017; Pritwani and Mathur, 2017; Raj and Kurpad, 2015.

Note: In some preparations given above the energy contributed by oil used in preparation has not been indicated. Calories contributed by oil can be easily added by assuming 1 tsp (5ml) of oil contributes 45 Kcal.

Tips For Healthy Eating

Choose foods wisely by remembering the following guidelines:

- Whole grains (consisting of the entire grain with all its parts like bran, endosperm and germ) and their products are healthier than refined grains in which some part of the grain (usually the bran and germ) are missing. Whole grains provide fibre, protein, essential fatty acids, vitamins and minerals. Avoid refined grains and flour to avoid spikes in blood glucose.
- Grams, beans, pulses with their seed coat are better as compared to dehusked and polished ones, as they are higher in fibre, protein, vitamins and minerals
- Instead of fatty/red meat, lean meat, lean cuts of poultry, and fish are better as they provide the goodness of protein without having too much of saturated fat and cholesterol which are not good for health. These should be eaten in moderate proportion.
- Consume plant-based oils, preferably virgin oils rich in mono unsaturated and omega 3 fats. Use a variety of oils for different preparations. Avoid saturated and trans fats or consume in very small amounts.
- Naturally coloured vegetables and fruits provide a host of protective phytochemicals besides fibre,

vitamins and minerals. Prefer whole fruits to fruit juices.

- Nuts and seeds like walnut, almond, pistachio, sunflower seeds, pumpkin seeds, flaxseeds etc. provide MUFA, omega 3 fatty acids, protein, vitamins and minerals. A fistful of nuts every day is good for health.
- Toned/double-toned/skimmed milk and products made from it (like cheese, paneer, curd etc.) are preferable to using whole milk.
- Consumption of sugar-sweetened food/beverages should be as low as possible. Baked foods, fried foods that may contain harmful trans-fats should be consumed in limited amounts occasionally. Prefer whole fruits instead of sugary and fatty desserts.
- Use salt in minimal amounts (<5g/day) and replace with herbs and spices as taste and flavor enhancers. They also have health benefits. Use iodised or double fortified salt.
- There are few food products which can be eaten in natural form such as cucumber, salad leaves, radish, peas, fruits etc. However, many foods which are included in the diet have to undergo processing at the primary level such as wheat to wheat flour, oilseeds into edible oils, sugarcane into sugar etc. Such products are then used for making items that we want to consume at household level as well as on a large scale at industrial level or in restaurants. Foods are also processed to extend the shelf life of foods and improve availability.

- While cooking at home it has to be kept in mind that foods should be prepared using minimum heating time. Wherever possible food should be covered while cooking. Excessive cooking/processing can lead to loss of nutrients and prevent us from getting them in adequate quantities. Use of oil, sugar and salt in dishes should be minimized.
- Consumption of processed foods which are high in fat, sugar and salt should be occasional.
- Plant based foods have more substances (phytochemicals) in them which act as antioxidants and are anti-inflammatory, helping us defend our body against infections and toxins.
- It is also important to have adequate quantities of safe drinking water as 50-60% of our body weight is water. Beverages low in fat, salt and sugar can also be consumed like buttermilk, lemonade coconut water, etc.
- Water should be boiled / filtered and kept in clean and covered utensils.
- Foods should be kept covered and it is better to eat freshly prepared food instead of leftovers. Leftover food should be refrigerated and reheated before consumption.
- Hands should be washed before eating and handling food.

4. What To Keep In Mind While Planning Diet Or Choosing Foods For Each Age Group

It is important to follow **Healthy Eating Habits.** The habitual pattern of eating, including quantity/quality and frequency of consumption, the calories in each meal and snacks, and food preferences are highly individualistic. In general, 25% of total calories for the day should be consumed for breakfast, 25% for lunch, 25% for dinner and rest 25% between main meals. **Meal size should suit our work/activity profile and energy needs.** Food selection will be dependent on food cost, food availability, traditions and religion, as well as likes and dislikes of individuals. The scope of this document is not to suggest what dishes can be consumed but give general guidelines for food choices. Meal timings need to be adjusted according to a person's lifestyle and work profile. Broadly it should be remembered that small and more frequent meals are better handled by the body than large meals eaten after long gaps. So, 4-5 smaller meals are better than 2-3 large ones. Habitually missing meals is also not a healthy practice as it may lead to acidity and weight gain. Breakfast should be taken properly every day. Mindful eating is also recommended for all age groups as is eating together with the family. Eating in front of a screen like television, mobile phone, tablet etc. does not make the person realise what and how much they have eaten. Eat in smaller plates/cups and serving bowls if you are trying to eat smaller portions.

Children need good nourishment for their growth and development. **Infants** up to the age of 6 months need only their mother's milk. After 6 months they, however, need other foods. These have to be introduced gradually into their diet starting with easily digestible foods in liquid form. This then progresses to a semi-solid and then solid consistency as the infant grows and is able to take in solid foods. The foods should be bland. Avoid adding sugar and salt to the foods initially. Fruits can lend natural sweetness and butter can be used to impart salty flavour. As the child grows and develops teeth, the child can start having the regular family food. Any new food should be given in very small quantities initially to judge the child's tolerance to the food. Gradually a variety of foods should be introduced into a child's diet. It is best to introduce new foods when a child is hungry. The temperature of the food served to small children

should be lukewarm. An infant needs to be fed every two hours.

The **pre-school child** has a small appetite and a short attention span for eating. Hence, in a small serving size a lot of nutrients need to be accommodated. The child likes to eat food he or she can hold and eat while moving around. These are called 'finger foods.' Foods presented in a variety of colours, texture and flavour are better accepted. However, the child prefers bland foods to heavily spiced or salted foods. Excessive use of fried and salted foods is to be avoided. This is the age when food habits begin to develop. Healthy foods offered to children at this stage will encourage better compliance to healthy diets later as well. Children should be encouraged to eat vegetables and fruits so that they develop a taste for these healthy foods.

The **school going child** needs a good breakfast to kick start the day and to be able to better concentrate in school. Early school hours make this a difficult proposition. The meal packed for the child to consume in school should be a complete meal having all the food groups. As there is very little time for the child to eat during the recess period, the meal packed should be non-messy and easy to eat. A single dish incorporating all the three food groups, like a chapati roll with paneer/dal/egg/sprouted dal and vegetable filling, is one such example. The child needs to eat at least **five meals** in a day and eating unhealthy snacks (like chips and other savouries, candy, etc.) in between these meals should be discouraged.

The **adolescent child** undergoes a spurt in growth, when the height and weight increase rapidly, and the child attains sexual maturity. All nutrients are important at this stage, especially good quality protein, calcium, zinc and iron and vitamin D. A nutritious breakfast is essential and at least **5 meals** during the day are recommended. Snacking is common in this age group. It is important to make sure that the snacks selected are healthy and do not replace meals.

Adults need nutrients for maintaining the normal functioning of the body and to prevent diet-related chronic diseases. It is advisable that adults who have a sedentary lifestyle (spending most of the day sitting and working) should consume energy giving foods in moderation, especially fats and sugars. They also need to monitor their weight regularly. If over a period of few months there is weight gain then the person is eating more calories than he or sheis burning and food intake needs to be reduced. Losing weight with time when one is not on a weight loss diet is also not desirable. Normal weight status lies between a Body Mass Index (BMI) of 18.5-22.9 kg/m^2. BMI can easily be calculated by dividing weight in kilograms by the square of height in metres. For instance, if one's weight is 66 kg and height is 158 cm or 1.58 m, then the square of 1.58 is 2.496; and 66/2.496 is 26.4 kg/m^2, which means the person is obese. It is pertinent to mention here that fat deposition around the abdomen is very harmful. A waist circumference of greater than 90 cm for men and more than 80 cm for women

increases their risk for diabetes and heart disease. Irrespective of weight status, regular physical exercise is recommended as exercise keeps the heart, muscles, brain, bone, joints and lungs fit and healthy.

Intake of fibre-rich foods daily is beneficial. Adults should have at least 5 servings of fruits and vegetables (roughly 400-500g) keeping in mind variety by attempting to eat all colours during the week. Antioxidants and other phytochemicals present in these can protect adults from various diseases.

Pregnant and Nursing women need to take special care in choosing nutrient rich foods'. Foods rich in folic acid, iron, calcium and zinc should be included in their diets. Pregnant women have to look after not only their own needs but also those of the growing baby in their womb. Nursing mothers have to feed a rapidly growing infant and ensure that the breast milk supplies all the necessary nutrients for the growth and development of the infant for the first 6 months. Every meal should have good quality protein to ensure proper growth and development of the baby. Omega-3 fatty acids are important for brain development of the baby. Fatty cold water fish (salmon, tuna, sardines, mackerel) and fish oils, legumes (rajmah, cowpea, soybean, black gram) cereals (wheat and bajra), mustard and fenugreek leaves and seeds, green leafy vegetables, oils(canola, mustard and soybean), flaxseed and walnuts are rich in this important fatty acid.

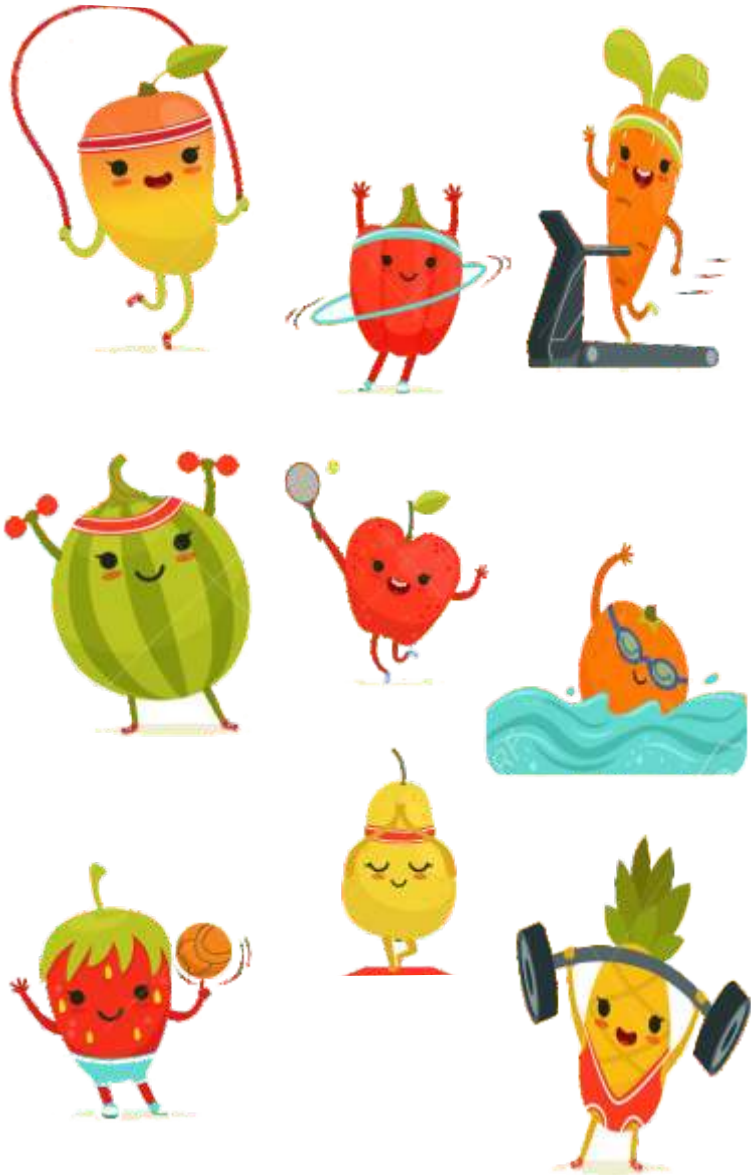
As the requirement of energy, protein and most nutrients increases during this period, it is important to increase the frequency of meals so that no single meal is too large. Easily digestible foods are preferred to avoid flatulence and indigestion. Adequate intake of fibre and fluids is important to avoid constipation. Women should avoid overeating as obesity may lead to other complications like diabetes, high blood pressure and problems during delivery. During pregnancy women should gain around 10 - 12 Kg to have normal weight babies.

Elderly or older adults need to take care as with advancing age there are many alterations in the way the body functions. The energy requirement decreases, and if the level of physical activity has also decreased due to retirement or ill health, then older adults need to decrease the fats and sugars they have been consuming. There should be neither any weight gain nor loss. Weak digestion and poor absorption may predispose the elderly to deficiencies of nutrients. Foods should be chosen to select iron, calcium, fibre and phytochemical rich sources. Liberal intake of fluids is also desirable to avoid constipation. Salt, sugar and fat consumption should be kept to a minimum. Simple, easy to digest foods and small portion sizes are preferable. Herbs and spices (except chillies) can be used liberally to enhance the taste of foods as taste sensation declines with age. As tooth decay and loss may be a problem the food needs to be soft and easy to chew.

How Much Physical Activity/Exercise Is Good For Us?

All age groups need to be physically active to remain healthy. Physical activity is good for maintaining healthy heart, lungs, muscles, brain and bones. The World Health Organisation has recommended that **adults and elderly** should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate and vigorous-intensity activity. Aerobic activity should be performed in bouts of at least 10 minutes duration. These activities can include walking, dancing, gardening, hiking, swimming, cycling, household chores, games, sports or planned exercise.

Children and youth aged 5–17 years should perform at least 60 minutes of moderate to vigorous intensity physical activity daily. Amounts of physical activity greater than 60 minutes provide additional health benefits. Most of the daily physical activity should be aerobic. Vigorous intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week. These activities can include playing games which involve running or jumping.



5. How To Enhance Nutrients In The Diet While Cooking At Home

Foods are naturally endowed with nutrients and phytochemicals which make them healthy. However, some foods may also have substances which prevent the nutrients from being absorbed and being fully utilised. Simple household processing techniques can improve the digestibility of foods and improve their nutritional quality. Germinating (sprouting) cereals and pulses before consumption or fermenting them (like while making *idli, dosa, dhokla etc.)* improves their nutritional quality. During germination and fermentation, complex substances are broken down to simpler substances which are easier to digest and absorb. Vitamins and minerals are released from bound forms and hence, are more readily available to the body. Inhibitory substances which decrease the digestion or utilisation of nutrients also get reduced.

Choosing fortified food products increases the amount of specific nutrients in the diet. Presently only salt is mandatorily fortified with iodine in India. Voluntary fortification by the industry of foods like cooking oil, milk, wheat flour, bread, biscuits is encouraged. Some nutrients may be difficult to get in sufficient quantity from processed foods. Fortified foods can improve diets by providing missing nutrients. Looking at food labels will tell you if the product is fortified or not.

The way we process, cook and store foods can also affect the nutritional quality. Sometimes we may be consuming the right blend of healthy foods but the way we cook and store them may be destroying or reducing the amount of nutrients they provide. The following tips are hence important to remember for conserving nutrients in our foods:

- *Wash grains thoroughly before soaking. Do not discard water used for soaking of rice and pulses as water soluble nutrients leach out into the water and will be thrown away with the water. The water used for soaking should be used to cook the pulses and rice.*
- *Also cook with minimal amount of water needed for the dish. Overheating to evaporate excess moisture or discarding excess cooking water can also result in loss of water soluble and heat sensitive nutrients.*
- *Vegetables and fruits should be thoroughly washed before peeling and cutting and not after, as it increases loss of water soluble nutrients.*
- *Use cooking methods (like pressure cooking) which shorten the cooking time. Excess heating leads to greater destruction of nutrients.*

- *Cook in covered utensils to reduce exposure to air as many nutrients get destroyed due to oxidation.*
- *Grating, mincing or chopping food into small pieces increases surface area thus increasing the destruction of nutrients due to exposure to air while cooking. This should be avoided.Grinding cereals and pulses to soft paste or as flour also increases blood glucose (known as glycaemia) due to higher absorption.*
- *Avoid the use of cooking soda while preparing pulses or vegetables as this leads to loss of B vitamins.*

It is also important to keep food safe for consumption. Food contaminated with chemicals or microbes can be harmful to our health even if we have been consuming a healthy diet with all the desirable nutrients. The following precautions can ensure safety:

- *Wash all grains (cereals and pulses) as well as fruits and vegetables thoroughly to remove all traces of dirt and pesticides.*
- *Buy all food from trusted sources.*
- *Preferably buy packaged spices with quality marks like Agmark to ensure that they are not adulterated. Look for 'FSSAI' (Food Standards and Safety Authority of India) certified products.*
- *Never buy loosely sold oil as it has higher chances of being adulterated.*
- *Cooked food left at room temperature for more than 2 hours can become contaminated with microbes. Always reheat foods to at least 70°C before consumption.*
- *Cooked foods which need to be kept for a while should either be kept hot (at more than 60°C) or cold in a refrigerator (at less than 5°C).*
- *Raw foods should never come in contact with cooked foods as they can cross-contaminate.*
- *Raw meat, fish, poultry is heavily contaminated with microbes and should not come in contact with vegetables and other foods. The same chopping board, knife and utensils should not be used for them*
- Fungus infected raw grains or foods should not be consumed, as they may have fungal toxins.
- *For packaged foods check the 'best before date' or 'expiry date' before purchase. Do not purchase if the seal has been tampered with or if cans or cartons are puffed up or leaking. These indicate spoilage.*
- Avoid cooking in poor quality aluminium, non-tinned brass or copper utensils as the metal may leach into the food. *Anodised aluminium is a safer option for acidic foods.*
- *Avoid storing, heating or eating in non-food grade plastic utensils or containers as chemicals from plastic leach into the food or water stored in these.*
- *Do not reheat oil used for frying. Use minimum quantity of oil necessary for frying to avoid wastage. After the first frying, the oil can be used up, to make other dishes only if it hasn't changed in colour or viscosity.*
- *Follow the FIFO rule of 'First In First Out' in the kitchen, using the foods you have purchased earlier first. This avoids spoilage of foods.*

Healthy Eating Patterns

Some popular dietary patterns that have been well tested and are recommended as healthy diets include - Mediterranean diets, Dietary Approaches to Stop Hypertension (DASH) diets, Vegetarian diets.

Mediterranean diets include good amounts of vegetables, legumes, fruits, nuts, whole cereals and fish. Butter is replaced with healthy oils such as canola, olive, rice bran, sesame and groundnut oils. Spices and herbs are used in place of salt to flavour foods.

DASH diet was primarily developed to reduce blood pressure, but many studies have also shown that this dietary pattern can reduce the risk of many chronic diseases. DASH diet is rich in fruits, vegetables and low fat dairy. It also includes mostly whole grains, lean meats, fish and poultry, nuts and beans.

Vegetarian dietary pattern includes all plant-based foods such as fruits, vegetables, cereal grains, legumes, nuts and seeds, and vegetable oils.

The common feature of such healthy eating patterns is to consume diets low in energy density, low in sodium and high in dietary fibre and micro /phytonutrients.

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GLOSSARY

BMI	Body Mass Index. BMI can be calculated by dividing body weight in kilograms by the square of height in metres.
MUFA	Monounsaturated Fatty Acids are considered as heart healthy fats. Rich sources of this type of fat are palmolein, groundnut oil, sesame oil, olive oil and ricebran oil
Omega 3 Fatty Acids	Omega 3 Fatty Acid are very good for health as they prevent inflammation and cardiovascular disease. Rich sources include fatty fish like salmon, tuna, sardines, mackerel and fish oils, invisible fat of legumes like kidney beans (rajma), cowpea (lobia), soybean, black gram, green leafy vegetables, flaxseed, walnuts, mustard, rapeseed and soybean oils.
PUFA	Polyunsaturated Fatty Acids are considered good for health but in moderate amounts. Excess of these may have harmful effects. All vegetable oils except coconut oil is rich in PUFA. Corn oil, safflower and sunflower oils especially have high amounts of this type of fat.
RDA	Recommended Dietary Allowances are the daily nutrient intake levels that meet the requirement of almost all healthy individuals in a population group. These are given for every age group and gender by the National Institute of Nutrition, Indian Council for Medical Research.
SFA	Saturated Fatty Acids are considered bad for health as they increase production of bad cholesterol in the body which increases the risk of cardiovascular disease. Rich sources include milk fat (butter, cream, ghee), coconut oil, palmolein, hydrogenated fats (vanaspati), red meat (meat of cow, buffalo, lamb, goat and swine), egg yolk, lard. Coconut oil has medium chain fatty acids, which have potential health benefits.
Trans Fat	Trans Fat are types of fats which are bad for health as they increase the bad cholesterol, decrease the good cholesterol and increase inflammation in the body. This increases the risk of cardiovascular disease. They are present in hydrogenated or partially hydrogenated vegetable oils (vanaspati), margarine, bakery fat/shortening.

Recommended Dietary Allowances for Energy, Protein, Fat and Minerals for Indians – 2010

Group	Category / Age	Body Weight (kg)	Net Energy (kcal/d)	Protein (g/d)	Visible Fat (g/d)	Calcium (mg/d)	Iron (mg/d)	Zinc (mg/d)	Magnesium (mg/d)
Men	Sedentary work	60	2320	60.0	25	600	17	12	340
	Moderate work		2730		30				
	Heavy work		3490		40				
Women	Sedentary work	55	1900	55.0	20	600	21	10	310
	Moderate work		2230		25				
	Heavy work		2850		30				
	Pregnant		+350	78	30	1200	35	12	
	Lactating 0-6 m		+600	74	30		21		
	6-12 m		+520	68	30				
Infants	0-6 months	5.4	92 kcal/kg/d	1.16 kcal/kg/d	--	500	46 µg/kg/d	--	30
	6-12 months	8.4	80 kcal/kg/d	1.69 kcal/kg/d	19		5		45
Children	1-3 years	12.9	1060	16.7	27	600	9	5	50
	4-6 years	18.0	1350	20.1	25		13	7	70
	7-9 years	25.1	1690	29.5	30		16	8	100
Boys	10-12 years	34.3	2190	39.9	35	800	21	9	120
Girls	10-12 years	35.0	2010	40.4	35		27	9	160
Boys	13-15 years	47.6	2750	54.3	45		32	11	165
Girls	13-15 years	46.6	2330	51.9	40		27	11	210
Boys	16-17 years	55.4	3020	61.5	50		28	12	195
Girls	16-17 years	52.1	2440	55.5	35		26	12	235

Source: Nutrient Requirements and Recommended Dietary Allowances for Indians, ICMR, 2010

Recommended Dietary Allowances for Water Soluble and Fat Soluble Vitamins for Indians – 2010

Group	Category / Age	Body Weight (kg)	Vitamin A (µg/d)		Thiamine (mg/d)	Riboflavin (mg/d)	Niacin equivalent (mg/d)	Vitamin B_6(mg/d)	Ascorbic Acid (mg/d)	Dietary Folate (µg/d)	Vitamin B_{12} (µg/d)
			Retinol	carotene							
Men	Sedentary work	60	600	4800	1.2	1.4	16	2.0	40	200	1.0
	Moderate work				1.4	1.6	18				
	Heavy work				1.7	2.1	21				
Women	Sedentary work	55	600	4800	1.0	1.1	12	2.0	40	200	1.0
	Moderate work				1.1	1.3	14				
	Heavy work				1.4	1.7	16				
	Pregnant		800	6400	+0.2	+0.3	+2	2.5	60	500	1.2
	Lactating 0-6 m		950	7600	+0.3	+0.4	+4		80	300	1.5
	6-12 m				+0.2	+0.3	+3				
Infants	0-6 months	5.4	350	--	0.2	0.3	710 µg/kg	0.1	25	25	0.2
	6-12 months	8.4		2800	0.3	0.4	650 µg/kg	0.4			
Children	1-3 years	12.9	400	3200	0.5	0.6	8	0.9	40	80	0.2-1.0
	4-6 years	18.0			0.7	0.8	11			100	
	7-9 years	25.1	600	4800	0.8	1.0	13	1.6		120	
Boys	10-12 years	34.3	600	4800	1.1	1.3	15	1.6	40	140	0.2-1.0
Girls	10-12 years	35.0			1.0	1.2	13				
Boys	13-15 years	47.6			1.4	1.6	16	2.0		150	
Girls	13-15 years	46.6			1.2	1.4	14				
Boys	16-17 years	55.4			1.5	1.8	17			200	
Girls	16-17 years	52.1			1.0	1.2	14				

Source: Nutrient Requirements and Recommended Dietary Allowances for Indians, ICMR, 2010

Appendix 2

Members of Healthy Food Task Force

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