

Healthy Diet

Introduction

Humans need a wide range of nutrients to lead a healthy and active life. For providing these nutrients, good nutrition or proper intake of food in relation to the body's dietary needs is required. An adequate, well balanced diet combined with regular physical activity is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity.

A healthy diet consumed throughout the life-course helps in preventing malnutrition in all its forms as well as wide range of non-communicable diseases (NCDs) and conditions. But rapid urbanization/globalization, increased consumption of processed foods and changing lifestyles has led to a shift in dietary patterns.

People are consuming more foods high in energy, fats, free sugars or salt/sodium, and many do not eat enough fruits, vegetables and dietary fibers such as whole grains. So, these all factors are contributing to an imbalanced eating. A balanced and healthy diet will vary depending on the individual needs (e.g. age, gender, lifestyle, degree of physical activity), cultural context, locally available foods and dietary customs but the basic principles of what constitute a healthy diet remain the same.

A balanced diet is one which contains variety of foods in such quantities and proportion that the need of all nutrients is adequately met for maintaining health, vitality and general wellbeing and makes a small provision for extra nutrients to withstand short duration of leanness.

The major food issues of concern are insufficient/ imbalanced intake of foods/nutrients. One of the most common nutritional problems of public health importance in India are low birth weight, protein energy malnutrition in children, chronic energy deficiency in adults, micronutrient malnutrition and diet related non-communicable diseases. Health and nutrition are the most important contributory factors for human resource development in the country.

Healthy dietary practices begin early in life. Recent evidences indicate that under nutrition in utero may set the pace for diet related chronic diseases in later life. Breastfeeding promotes healthy growth and improves cognitive development, and may have longer-term health benefits, like reducing the risk of becoming overweight or obese and developing NCDs later in life.

Since a healthy diet consists of different kinds of foods, the emphasis has been shifted from nutrient orientation to the food based approach. Foods can be categorized according to the function as-

Energy rich foods (Carbohydrates and fats)-whole grain cereals, millets, vegetable oils, ghee, nuts and oilseeds and sugars.

Body building foods (Proteins)- Pulses, nuts and oilseeds, milk and milk products, meat, fish, poultry.

Protective foods (Vitamins and minerals) - Green leafy vegetables, other vegetables, fruits, eggs, milk and milk products and flesh foods.
Diet during different stages of Life

Nutrition is important for everyone. However, the requirement is different for every individual may it be an infant, growing child, pregnant/lactating women and elderly people. The diet varies from person to person depending upon various factors like age, gender, physical activity, nutritional requirement during different physiological stages of the body and other various factors. Body weights and heights of children reflect their state of physical growth and development, while weights and heights of adults represent steps taken towards good health.

Diet for an Infant:

If you have an infant or kid at your place, make sure that they get enough nutrition in their growing years of age. Babies should be exclusively breastfed for the first six months of life. Breast feeding should be started within an hour after delivery and do not discard first milk (colostrum), as it boosts the immunity of the baby and protects baby from several infections. Exclusive breast-feeding ensures safe nutrition to the infant thereby reducing the risk of infections and also helps in the overall development of the baby. Breast-milk is the most natural and wholesome food for growth and healthy development of infants. Breast-fed infants do not need additional water. After six months, you can feed your baby with complementary foods while continuing to breastfeed. Complementary food should be rich in nutrients. These complementary foods can be prepared at home from commonly used food materials such as cereals (wheat, rice, jowar, bajra, etc.); pulses (grams/dals), nuts and oilseeds (groundnut, sesame, etc.), oils (groundnut oil, sesame oil etc.), sugar and jaggery. You can feed your baby to variety of soft foods like potatoes, porridge, cereals, or even eggs. According to WHO,

Infants should be breastfed exclusively during the first 6 months of life.

Infants should be breastfed continuously until 2 years of age and beyond. From 6 months of age, breast milk should be complemented with a variety of adequate, safe and nutrient dense complementary foods.

Infants cannot eat large quantities of food at a single time so they should be fed small quantities at frequent intervals (3-4 times a day). Also, the food should be of semi-solid consistency so that the infants can swallow it easily. A balanced diet is the key to protect your child against nutritional deficiencies. Protein Energy Malnutrition more commonly affects children between the ages of 6 months and 5 years. Malnutrition is defined as "a state of poor nutrition caused by insufficient or unbalanced diet".

Points to Remember:

Start breast-feeding within an hour after delivery and do not discard colostrum.

Breast-feed exclusively (not even water) for six months.

Continue breast-feeding in addition to nutrient-rich complementary foods preferably up to 2 years.

Breast-milk alone is not enough for infants after 6 months of age. Complementary foods should be given after 6 months of age, in addition to breast-feeding.

Feed low-cost home-made caloric and nutrient rich complementary foods. Observe hygienic practices while preparing and feeding the complementary food for infants.

Read nutrition label on baby foods carefully as children are most prone to infections.

Avoid junk foods.

Diet for a Growing Child:

Children who eat a balanced diet lay the foundation for a healthy and active lifestyle and this further lowers the risk of long term health issues. Childhood is the most critical time for growth as well as for development of the mind and to fight infections. So, it is very essential that the children get a good dose of energy, proteins, vitamins and minerals. It is very important to follow that hygienic practices are followed while preparing and feeding the complementary food to the child; otherwise, it might lead to diarrhoea. A well formulated balanced diet is necessary for children and adolescents to achieve optimum growth and boost their immunity. Balanced Diet, playing outdoors, physical activities of child are essential for optimum body composition and to reduce the risk of diet related chronic conditions later in life and to prevent any sort of vitamin deficiency. Adolescence has various other factors attached to it: rapid increase in height and weight, hormonal changes and mood swings.

Development of bone mass is going on during this period so inclusion of dairy products (milk, cheese, yoghurt) and vegetables like spinach, broccoli and celery which are rich in calcium is a must.

Children require good amount of carbohydrates and fats for energy. Therefore, it is very essential to give them a daily intake of energy rich foods as whole grains (wheat, brown rice), nuts, vegetable oils, vegetables like potatoes, sweet potatoes, fruits like banana.

In case of children, proteins are essentials for muscle building, repair and growth and building antibodies. So give them diet which has meat, eggs, fish and dairy products.

A child needs vitamins for the body to function properly and to boost the immune system. A variety of fruits and vegetables of different colours should be added in child's food. Vitamin A is essential for vision and a deficiency of the same can lead to night blindness (difficulty in seeing in night). Dark green leafy vegetables, yellow, orange coloured vegetables and fruits (such as carrots, papaya, mangoes) are good sources of Vitamin A.

Vitamin D helps in bone growth and development and it is essential for absorption of calcium. Children get most of their Vitamin D from sunlight and a small amount from some food items like (fish oils, fatty fish, mushrooms, cheese and egg yolks).

Teenage girls experience more physiological changes and psychological stress than boys because of onset of menarche (onset of menstruation). Therefore, teenage girls should eat diet which is rich in both vitamins as well as minerals to prevent anemia.

Now a days, children are more inclined towards junk food but it is very important to motivate your kids in teenage to eat nutrition rich foods. Many children have poor eating habits, which can lead to various long-term health complications, such as obesity, heart disease, type 2 diabetes and osteoporosis. As a parent, keep making frequent changes in their menu to avoid boredom of eating the same food every day. Adolescence is the most vulnerable stage for developing bad food habits as well as bad habits like smoking, chewing tobacco or drinking alcohol. These should be avoided. In addition to consumption of a nutritious well balanced diet, appropriate lifestyle practices and involvement in outdoor activities such as games/sports should be encouraged among children as well as adolescents. Regular physical exercises increase strength and stamina, and are necessary for good health and well being.

Points to Remember:

Take extra care in feeding infants and include soft cooked vegetables and seasonal fruits.

Give plenty of milk and milk products to children and adolescents as calcium is needed for growth and bone development.

Encourage your child for outdoor activities and promote appropriate lifestyle practices like washing your hands before meals, brushing your teeth twice a day, hygiene practices to name a few.

Avoid overeating during a single meal. Eat at frequent intervals.

Exposure to sunlight helps maintains vitamin D which helps in calcium absorption.

Never starve the child. Feed energy-rich cereals-pulse diet with milk and mashed vegetables.

Give plenty of fluids during illness. A child needs to eat more during and after episodes of infections to maintain proper nutritional status.

Use oral rehydration solution (ORS) along with zinc tablet to prevent and control dehydration during diarrhea episodes.

Drink 2-2.5 liters of water to hydrate the body. It is preferred to have water/buttermilk/lassi/fruit juices/coconut water over soft drinks and other packaged drinks.

Diet for Pregnant and Lactating Mother:

Motherhood is a testing phase in every women's life may it be physiologically, mentally as well as nutritionally. If you are pregnant or someone in your family is expecting a baby, make sure that they eat well. Additional food and extra attention is required during pregnancy as well as lactation. Extra food is required to meet the nutritional requirement of the baby in your womb. Additional foods are required to improve the weight gain in pregnancy (generally 10-12 kgs) and birth weight of infants (about 2.5kgs-3kgs). The nutritional requirement of a pregnant woman keeps changing depending upon the various trimesters of pregnancy. In some cases, micronutrients (like folic acid/ iron tablets) are specially required in extra amounts to reduce the risk of

malformations in baby and increase birth weight of baby and to prevent anaemia in expecting mothers.

Extra intake of Calcium is required, during pregnancy and lactation phase, for proper formation of bones and teeth of the baby, for secretion of breast-milk which is rich in calcium and to prevent osteoporosis in the expecting and lactating mothers. Therefore, their diet should contain calcium rich foods such as milk, yogurt, cheese, green leafy vegetables, legumes and seafood. Vitamin A is required during lactation to improve child survival. Apart from these, nutrients like Vitamin B12 and C are also needed to be taken by lactating mother.

Iron is needed for hemoglobin synthesis, and to provide immunity against diseases. Deficiency of iron leads to anaemia. Iron deficiency is common particularly in women of reproductive age and children. Iron deficiency during pregnancy increases maternal mortality and low birth weight infants. Plant foods like green leafy vegetables, legumes and dry fruits contain iron. Iron can also be obtained through sources like meat, fish and poultry products. Consume vitamin C- rich fruits like gooseberries (amla), guava, oranges and citrus rich fruits for better absorption of iron from your diet.

Iodine deficiency during pregnancy results in still births, abortions and cretinism therefore use iodized salt in your food.

So, now you know why good nutrition is essential. Well, it's important for a pregnant mother to maintain fetus as well as her own health, to provide strength required during labor; and for successful lactation. Make sure that the diet taken during pregnancy is light, nutritious, easy to digest and rich in all essential nutrients.

Booklet for expecting mothers

(Reference: nrhm.gov.in)

Points to Remember:

Eat more food during pregnancy both in quality and quantity.

Eat more whole grains, sprouted grains and fermented foods.

Eat plenty of fruits and green leafy vegetables.

Do not consume alcohol and tobacco. It is harmful for the health of mother as well as child.

Take medicines only when prescribed by doctor.

Take iron, folate and calcium supplements regularly as prescribed by the doctor.

Green leafy vegetables, legumes, nuts and liver are good sources of folic acid.

Diet for an Adult Male & Female:

As an adult male and female, you must take care of your diet. Adults generally complain of time crunch and with sedentary lifestyle, it becomes even more difficult to follow a strict diet. Adults should use

salt in moderation as high intake of salt might lead to high blood pressure. One should avoid preserved foods such as pickles/ papads and also canned foods as it contributes to higher intake of salt. An adult female should take a diet which is rich in calcium (Milk & dairy products) as well as iron (green leafy vegetables-spinach, broccoli etc.) Limit use of saturated fats and trans fats such as ghee, butter, cheese, vanaspati ghee and add more fibrous food in diet in the form of whole grains, vegetables and fruits.

According to WHO, a healthy diet for adults contains:

Fruits, vegetables, legumes (e.g. lentils, beans), nuts and whole grains (e.g. unprocessed maize, millet, oats, wheat, brown rice).

At least 400grams (5 portions) of fruits and vegetables a day. Potatoes, sweet potatoes, cassava and other starchy roots are not classified as fruits or vegetables.

Unsaturated fats (e.g. found in fish, avocado, nuts, sunflower, canola and olive oils) are preferable to saturated fats (e.g. found in fatty meat, butter, palm and coconut oil, cream, cheese, ghee and lard).

Industrial trans fats (found in processed food, fast food, snack food, fried food, frozen pizza, pies, cookies, margarines and spreads) are not a part of a healthy diet.

Less than 5 g of salt (equivalent to approximately 1 teaspoon) per day and use iodized salt.

WHO- Healthy Diet

Diet for Elderly People:

Individuals of 60 years and above constitute the elderly .The diet for elderly people should include nutrient rich foods to enable them to be fit and active. Senior citizens need more of vitamins and minerals to be healthy and active.

The body composition changes with the advancing age and all these changes affect nutritional needs of the elderly. Elderly or aged people require reduce amount of calories as their lean muscle mass and physical activity decreases with ageing. Elderly need more calcium, iron, zinc, vitamin A and antioxidants to prevent age-related degenerative diseases and for healthy ageing. It is very essential to maintain your health as ageing process starts and it increases the life expectancy. It is very important for elderly people to exercise as it helps to regulate body weight and flexibility in the joints. The risk of degenerative diseases also considerably decreases with regular exercise session.

Elders generally complain of loss of appetite or sometimes difficulty in chewing. A soft diet should be given to elders, with inclusion of fruits and vegetables in their diet. Calcium rich foods like dairy products (low fat), milk (toned) and green leafy vegetables should be included in the daily diet to maintain bone health, so as to prevent osteoporosis and bone fractures. Consume pulses, toned milk, egg-white etc. in good quantities as they are rich in proteins. Elderly people should cut down on their saturated fats, sweets, oily food, salt and sugar level. Use of ghee, oil, butter should be completely avoided. Also, avoid eating spicy food.

The diet for elderly people needs to be well cooked, soft and should be less salty and spicy. Ensure to eat small quantities of food at more frequent intervals and drink water at frequent intervals to avoid dehydration and constipation. Consult a doctor for an individualized diet depending upon the medical condition in the case of persons suffering from chronic diseases and bed ridden patients.

Points to Remember:

Eat a variety of nutrient-rich foods.
Match food intake with physical activity.
Avoid fried, salty and spicy foods.
Consume adequate water to avoid dehydration.
Exercise regularly or go for a walk.
Avoid smoking, chewing of tobacco and tobacco products (Khaini, Zarda, Paan masala) and consumption of alcohol.
Go for regular checkups. Check regularly for blood sugar, lipids and blood pressure.
Avoid self medication.
Adopt stress management techniques (Yoga and Meditation).
Role of different kinds of food material on health

Vegetables and fruits in diet
Different kinds of Fats/oils
Salt intake
Whole grains
Water and beverages
Processed and ready to eat food
Instant foods , fast foods, street foods, unhealthy foods
(a)Vegetables and fruits in diet-

Vegetables and fruits are rich source of micronutrients (iron, calcium, vitamin C, folic acid, carotenoids and phytochemicals) and macronutrients (complex carbohydrates/ fibre).

Some vegetables and fruits provide very low calories, while some others provide good calories as these are rich in starch (such as potato, sweet potato, fruits as banana). Therefore, vegetables and fruits can be used to increase or decrease calories in the diet.

At least 400grams (5 portions), of fruits and vegetables per day should be consumed in the diet by an individual.

Vegetables and fruits consumptions can be improved by-
Always include vegetables and fruits in the diet
Eat fresh, locally available, seasonal vegetables and fruits.
Eat a variety of choices of fruits and vegetables ("rainbow of coloured foods") in a diet plan as different coloured fruits and vegetables contain different nutrients (phytochemicals).
Eat fresh fruits and raw vegetables as snacks.
(b)Different kinds of Fats/oils-

Fats/oils are concentrated source of energy. Dietary sources of fats are classified as-

Animal fat -Major sources of animal fats are ghee, butter, milk, cheese, eggs and fat of meat and fish. They contain cholesterol and high amount of saturated fatty acids and trans fatty acids.

Vegetable fat- Seeds of some plants are sources of vegetable oils as groundnut, mustard, sesame, coconut, canola, olive and soya bean.

Edible plant foods have a low content of fat and saturated fatty acids but they are good source of mono-unsaturated fatty acids (MUFAs) and polyunsaturated fatty acids (PUFAs).

Visible and invisible fats-

Visible fats are those that are separated from their natural sources such as ghee/butter from milk, cooking oils from oil bearing seeds and nuts. It is easy to monitor their intake.

Invisible fats are those, which are present in almost every article of foods such as cereals, pulses, nuts, milk, and eggs and are difficult to estimate.

It is recommended that between 15-30% of total calories in the diet should be provided in the form of fats (visible + invisible). Diets of infant and children should include adequate amounts of fats to fulfill their higher energy needs than adults.

Excessive fats in the diet increases the risk of obesity, heart disease, stroke and cancer. The risk of developing these diseases can be lowered by reducing saturated fats to less than 10% of total energy intake, and trans fats to less than 1% of total energy intake, and replacing both with unsaturated fats (MUFAs+ PUFAs).

Vanaspati ghee - When vegetable oils are hydrogenated, it converts them in to semisolid or solid form which is called as vanaspati or vegetable ghee. During process of hydrogenation unsaturated fatty acids are converted in to saturated fatty acids and trans fatty acids. As saturated fats and trans fats are risk factors for development of non-communicable diseases (coronary heart disease, stroke, diabetes, cancer, obesity), use of vanaspati ghee should be limited in the adult population. Vanaspati ghee is mostly used in bakery products, sweets, and snacks products.

Fat intake can be reduced by:

changing how the food is cooked such as use vegetable oil (not animal oil); remove the fatty part of meat; and boil, steam or bake rather than fry;

avoiding processed foods containing trans fats (eg. preparation prepared from vanaspati ghee);

Limiting the consumption of foods containing high amounts of saturated fats (e.g., cheese, ice cream, fatty meat, palm and coconut oil, ghee, lard). Unsaturated fats (e.g. found in fish, avocado, nuts, sunflower,

canola and olive oils) are preferable to saturated fats (e.g. found in fatty meat, butter, palm and coconut oil, cream, cheese, ghee and lard)
(c) Salt (sodium and potassium) intake-

Salt is an important ingredient of the diet. Most people do not know the amount of salt they consume. High salt consumption and insufficient potassium intake (less than 3.5 g) contribute to high blood pressure, which in turn increases the risk of heart disease and stroke. World Health Organization (WHO) recommends use of less than 5g of salt per day.

Salt consumption can be reduced by -

Limiting addition of salt during cooking.

Not having salt on the table.

Do not add additional salt to the already prepared dish.

Limiting the consumption of salty snacks, processed foods (like papads, pickles, sauces, ketchup, salted biscuits, chips, cheese and salted fish).

Increasing potassium intake by consumption of fresh fruits and vegetables as potassium decreases the negative effects of sodium (salt).

Choosing products with lower salt (sodium) content.

Use only Iodized salt for consumption and should be stored in an air tight container to avoid moisture.

(d) Sugars-

Free sugars are all sugars added to foods or drinks during cooking or by the manufacturer or consumer, as well as sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates. Free sugars increase the risk of dental caries (tooth decay) and can lead to overweight and obesity. The intake of free sugars should be less than 10% of total energy intake.

Sugar intake can be reduced by-

limiting the consumption of foods and drinks containing high amounts of sugars (e.g. sugar-sweetened beverages, sugary snacks and candies); and eating fresh fruits and raw vegetables as snacks instead of sugary snacks.

(e) Whole grains-

A whole grain contains all edible parts of the grain, including the bran, germ, and endosperm. A diet rich in whole grains (like, whole wheat, brown rice, oats, unprocessed maize, millets) has been shown to reduce the risk of heart disease, type 2 diabetes, obesity and some forms of cancer. Whole-grain diets also improve bowel health by helping to maintain regular bowel movement and promote growth of healthy bacteria in the colon.

(f) Water and beverages-

Water accounts about 70% of human body weight. Water is lost from body through sweat, urine and faeces. Enough of safe water should be drunk to meet daily fluid requirements.

Milk- Milk is a wholesome food and beverage for all age groups. Milk proteins are valuable supplements to most vegetarian diets. Milk is a rich source of calcium (poor source of iron) which helps in the building up of strong bones. Thus milk is a good source of proteins, fats, sugars, vitamins (except vitamin C), and minerals. Milk fats are saturated fats hence those who have to take low fat diet, can consume skimmed/toned milk.

Toned Milk- It is blend of natural milk and made-up milk. It contains one part of water, one part of natural milk and 1/8part of skim milk power. Since milk fat is of the saturated type, those who have to be on a low fat diet can consume skimmed/toned milk.

Vegetable milk-Milk prepared from certain vegetable foods (groundnut, soyabean) is termed vegetable milk. It may be used as substitute for animal milk.

Soft drinks-These may be:

Natural soft drinks (natural fruit juices)-which provide in addition to energy, some vitamins (beta carotenes, vitamin C) and minerals (potassium, calcium). As natural fruit juices are rich in potassium, they are ideal beverages for persons suffering from hypertension.

Artificial or synthetic soft drinks -which are prepared by using preservatives, artificial colours and flavours and are usually carbonated (contain phosphoric acid which may affect enamel of teeth).

Beverages like buttermilk, lassi, fruit juices, and coconut water are better options for beverages than synthetic drinks.

Tea and coffee - These are used for their flavour or their stimulating effects. Tea and coffee consumption is advised in moderation. Tannin present in tea and coffee interferes with iron absorption hence they should be avoided one hour before and after meals. Teas particularly green and black are good sources of flavonoids, (substances believed to have antioxidant properties). Tea may be preferred over coffee.

Sports Beverages- Regular sports drinks contain energy-yielding carbohydrates plus electrolytes, including sodium, potassium, and chloride for providing energy and maintaining fluid and electrolyte balance.

Energy Drinks- Energy drinks provide carbohydrates and caffeine (70 to 85 mg of caffeine per eight-ounce serving) and some drinks contain B complex vitamins, amino acids and herbal extracts such as ginkgo.

Tender coconut water-It is a nutritious beverage can be used as oral rehydration medium, however in patient having hyperkalaemia such as renal failure, acute adrenal insufficiency and in patients with low urine output, it should be avoided.

Alcohol- Excessive alcohol intake weakens the heart muscle (cardiomyopathy) and also damages the liver (cirrhosis), brain and peripheral nerves. It also increases serum triglycerides.

Avoid alcohol and those who choose to drink, should limit its use.
(g) Processed and ready to eat foods-

Processed foods- Foods that are subjected to technological modifications either for preservation or for converting into ready-to-use/eat foods, eliminating laborious household procedures, are called "processed foods". Food processing techniques include freezing, canning, baking, drying and pasteurising products. Food processing is used to preserve highly perishable products like milk, meat, fish and fresh fruits and vegetables. Food processing also facilitates seasonal availability of foods and transportation over long distances.

During processing sometimes ingredients such as salt, sugar and fat are added to make them more appealing, change in food structure and to prolong their shelf life. They may lack dietary fibre and micronutrients. Thus, awareness about their consumption should be there, when processed foods constitute a major part of the meal.

(h) Instant foods, fast foods, street foods, unhealthy foods (Junk foods)-

Instant foods- Foods that undergo special processing for ready to be served once dissolved or dispersed in a liquid with low cooking time such as noodles, corn flakes, soup powder.

Fast foods-Foods which are rapidly prepared and quickly served in a packaged form for take away. These are calories rich foods (burgers, pizzas, fries, hamburgers, patties, nuggets, indian foods like pakora, samosa, namkeen etc). Storage, handling and contamination are the major concerns for such foods.

Street foods- Ready to eat foods and beverages prepared and, sold by hawkers or vendors in streets or other public places, such as chaat, golgappe, samosa, tikki, noodles, chowmein, burgers etc. Food hygiene is an important issue in street foods (prevention of food contamination).

Unhealthy foods or Junk foods- these are energy dense foods with high sugar/ fat/ content and low nutrient value in terms of protein, fibre, vitamin and mineral, such as salt Chips, chocolate, ice-cream, soft drinks, burgers, pizzas etc.

Safe and Clean Food

Best practices for storage

With the proper storage tools a person can store many different types of foods indefinitely. Learning how to store food is simple to understand and very cost effective. Improper storage of food items allows bacteria to grow and thrive, causing food spoilage which leads to food wastage and potential food poisoning.

Consider the following when storing food:

Agricultural commodities should be dried adequately and protected from moisture in a safe storage structure (eg. tin with a tight lid) to prevent damage from moulds.

Ensure all foods are covered and stored in appropriate food containers. Before any food source is to be stored, clean the containers with soapy water, rinse and dry thoroughly. Make sure the lid (Cup) of container is airtight and spill proof.

Label the container with the date of packing and expiry date.

Store in a dark storage area, where temperatures, moisture levels and sunlight do not fluctuate.

Keep storage areas clean, not cluttered and pest-free.

Food storage and packaging materials area should be situated away from toilets, dust, smoke, objectionable smell and other contaminants.

Store food items or ingredients off the floor and away from the wall.

Store fresh fruits and vegetables such as strawberries, lettuce, herbs, and mushrooms in a clean refrigerator at a temperature of 40° F or below.

Refrigerate all produce that is purchased pre-cut.

If possible, store raw and cooked/ready-to-eat (RTE) food items in separate chillers or freezers.

Establish personal hygiene while storing.

Some traditional household practices such as application of edible oils to grains, placing dried neem leaves in storage bins etc., are known to prevent infestations.

Handling of perishable foods

To ensure the food you consume is fresh and safe to eat, below are some easy tips:

General tips

Buy only the best quality food if you plan to store it for any length of time.

Fresh and cured meats, fish and shellfish, dairy products and prepared foods should only ever be bought from a refrigerated display.

Cross contamination can be avoided by keeping cooked and raw food separately.

Refrigerated cooked food should be heated before consumption.

Repeated heating should be avoided.

Foods with strong smell, such as sea foods and some cheeses, should be wrapped.

The 'best before' date is your best guide to storage of a particular perishable food.

Proper storage keeps your food safe from the growth of food poisoning bacteria,

Dairy Products

Fresh milk, cream and some soft cheeses have only a short shelf life and lose quality rapidly if exposed to warm temperatures during storage.

These should be kept in refrigerator.

Fresh fruit and vegetables

Fruit and vegetables should be handled carefully to avoid bruising and breaking the skin. Such damage will cause deterioration and rotting. Most fresh fruits should be stored in the coolest part of the house when space is not available.

Some fruits such as pineapple and bananas are chill sensitive and should not be stored in the refrigerator.

To reduce shriveling or wilting due to water loss, keep leafy and root vegetables, such as silverbeet, broccoli, carrots and parsnips, in perforated plastic bags, preferably in the refrigerator.

By removing leafy tops from carrots, parsnips, turnips and beetroot, their storage life can be extended too many weeks or even several months in the refrigerator.

Keep potatoes in a cool, dark, well ventilated place to avoid greening and sprouting; remove from plastic bags and place in a strong paper bag, box or in a wire or plastic bin. Potatoes should not be kept in the fridge.

Keep nectarines, peaches and plums in the refrigerator, unless you want to ripen them.

Tomatoes should be ripened at room temperature, away from direct sunlight. When fully ripe, especially in hot weather, they may be stored in the refrigerator for several days.

To reduce mould growth in onions, whole pumpkin, marrows and squashes, store at room temperature under dry conditions, in a net or loose.

Egg

Eggs, contrary to what many people believe, should be stored in the refrigerator. This will maintain egg quality and considerably lengthen storage life. They should preferably be stored in their cartons to reduce moisture loss through the shell.

Non-Vegetarians

Raw meat, poultry and seafoods

Meat items should be stored in the coldest part of your refrigerator. These foods should be stored under refrigeration, preferably at a temperature of 10 C or less, which retards multiplication of microorganisms.

Before storing chilled chicken for a couple of days, it is a good idea to take off the plastic wrapping, wash the chicken thoroughly, dry it with a paper towel then store as above.

Fresh whole fish should be gutted and washed if it is to be stored for more than 24 hours.

Cooked meat, poultry and seafoods

Meat, poultry and seafoods must be refrigerated as soon as possible after cooking.

To avoid condensation, do not cover hot meat pieces before refrigerating. Store cooked products above any raw meat, poultry or seafoods to avoid cross contamination.

What about personal hygiene?

Food handlers should observe good personal hygiene to maintain food safety. They should be free from obvious signs of illness, wounds and sores.

Use of spoons and ladles should be encouraged to avoid contamination. Avoid cooked food is touched by the hands while preparing, serving and eating.

Hands should be washed thoroughly before starting the preparation of food and after every interruption.

Household pets like cats and dogs often harbour dangerous pathogens. They should be kept away from places where food is cooked, stored or served.

Removal of the Pesticide Residues from the Food products by different methods (How to minimize effects of pesticides)

Most of the pesticide residues can be removed by adopting four methods of residues removal. These methods should be easily adopted at the household level to remove the pesticide residual contamination. These methods are washing, blanching, peeling and cooking.

Washing

The first step in the removal of pesticide residues from the food products is washing. Washing with 2% of salt water will remove most of the contact pesticide residues that normally appear on the surface of the vegetables and fruits. About 75-80% of pesticide residues are removed by cold water washing.

The pesticide residues that are on the surface of the grapes, apples, guava, plums, mangoes, peaches, pears etc, fruity vegetables like tomatoes, brinjal, and okra require 2-3 washings.

The green leafy vegetables must be washed thoroughly. The pesticide residues from green leafy vegetables are removed satisfactorily by normal processing such as washing blanching and cooking.

Blanching

A short treatment in hot water or steam applied to most of the vegetables. Certain pesticide residues can effectively be removed by blanching. But before blanching it is very important to thoroughly pre-wash the vegetables & fruits etc.

Peeling

Contact pesticides that appear on the surface of the fruits and vegetables can be removed by peeling.

Cooking

Animal Products

Animal products are also the major source of contamination for pesticide residues in human diets since the animals feed on fodder, which are sprayed with pesticides. Pressure cooking, frying and baking will remove pesticide residues from the animal fat tissues.

Dairy products

Boiling of milk at elevated temperatures will destroy the persistent pesticide residues.

Vegetable Oils

Refined oils will have fewer amounts of pesticide residues. Household heating of oils up to a particular flash point will remove pesticide residues.

What are the common adulterants?

Foods may be adulterated with non-food material or inferior quality product. Spoilt, stale or poor quality food is made attractive and fresh by adding harmful colors or other chemicals.

Frequently adulterated food items are milk and milk products, cereals, pulses and their products, edible oils and spices. The different classes of adulterants include non-permitted colors like yellow; non-edible oils like castor oil; cheaper agricultural produce like various starches in milk powder; extraneous matter like husk, sand and sawdust; and metal contaminants like aluminum or iron filings.

Consumption of adulterated foods could lead to disease outbreaks of epidemic proportions. Buying from a reliable and reputed source, careful checking of foods before purchase and insisting on certified brands will all minimize the risk of food adulteration.

Please visit Food Safety and Standards Authority of India (FSSAI) ([http://www.fssai.gov.in/Portals/0/Pdf/Final_test_manual_part_I\(16-08-2012\).pdf](http://www.fssai.gov.in/Portals/0/Pdf/Final_test_manual_part_I(16-08-2012).pdf)) to know more about household tests, which could be done easily at your home.

Healthy Cooking Practices

Foods, in their natural state, contain different nutrients in varying amounts. Cooking improves the digestibility of most foods. Raw food get softened on cooking and become easily chewable. Proper methods of cooking render food healthy. Positive food concepts and cooking practices are foundation for good health by improving the appearance, taste, flavour and texture, thereby enhancing acceptability. Cooking process also helps to eliminate disease causing organisms and destroy natural inhibitors of digestion. Cooking food is a common thing in our homes, but it is good if we follow healthy cooking practices. We can classify the food cooking process in three stages such as:

Precooking Preparation

Washing and cutting of raw food

Cooking Methods

Precooking Preparation:

According to the food preparation, the cooking process of any food may include washing, grinding, cutting, fermentation, germination and cooking. In Indian cuisine, fermentation (process used in making idli, dosa, dhokla) and germination (sprouting) are common practices. These methods improve digestibility and increase nutrients such as B-complex vitamins and Vitamin C.

Washing and Cutting of raw food:

Raw food may contain pesticide residues, parasites and other extraneous material. In order to clean the same, foods should be washed well before

cooking and consumption to remove these contaminants. Vegetables and fruits should be washed thoroughly with clean water before cutting. Cutting of vegetables in to small pieces exposes a greater surface area of the foodstuff to the atmosphere, resulting in loss of vitamins due to oxidation. Therefore, vegetables should be cut in to large pieces. Cut vegetables should not be soaked at all in water as water-soluble minerals and vitamins get washed away. However, certain precautions should be taken while washing and cutting to minimize the loss of nutrients. Avoid repeated washing of food grains like rice and pulses as it might lead to loss of certain minerals and vitamins.

Cooking Methods:

There are many methods of cooking like boiling, steaming, pressure cooking, frying, roasting and baking. Boiling is the most common method of cooking, but because of this process some heat-labile and water-soluble vitamins like vitamin B-complex and C is lost. Cooking rice with excess of water may lead to the loss of nutrient value so just use sufficient water to be fully absorbed. To avoid loss of vitamins, use of baking soda for hastening cooking of pulses should not be practiced. Repeated heating of oils particularly Polyunsaturated Fatty Acid (PUFA)-rich oils results in formation of peroxides and free radicals hence, should be avoided by using just enough oil. Similarly, oils which have been repeatedly heated should not be mixed with fresh oil but should be used for process such as seasoning.

Some common Indian food beliefs, fads and taboos:

Food habits are formed early in childhood, passed on from the elders in the family and perpetuated to adulthood. Food beliefs either encourage or discourage the consumption of particular type of foods. There can be neutral, harmless or harmful practices. Unfortunately, most of the food fads and prejudices (taboos) are associated with women and children, who are also the most vulnerable to malnutrition. Exaggerated beneficial or harmful claims in respect of some foods, without scientific basis constitute food fads. In addition, the belief of heat producing and cold inducing foods is widely prevalent. Here are some examples:

Jaggery, sugar, groundnuts, fried foods, mango, bajra, jowar, maize, eggs and meat are considered as hot.

Buttermilk, curd, milk, green gram dhal, green leafy vegetables, ragi, barley flour and apples are considered as cold inducing foods.

Papaya fruit is strongly suspected to lead to abortion, though there is no scientific basis.

Vegetarianism is often practiced in India on religious grounds. Since vitamin B12 is present only in foods of animal origin, vegetarians should ensure an adequate consumption of milk.

During certain illnesses like measles and diarrhoea, dietary restriction is practiced.

Diet and Weight Management

A healthy eating plan gives your body the nutrients it needs every day. It shall have enough calories for good health, but not so much that it makes you overweight.

A healthy eating plan is the one with low in saturated fat, trans fat, cholesterol, sodium (salt), and added sugar. Following a healthy eating plan will lower your risk for overweight /obesity, heart disease and other related conditions.

Healthy foods include:

Fat-free and low-fat dairy products, such as low-fat yoghurt, cheese, and milk.

Protein foods, such as lean meat, fish, poultry without skin, beans, and peas.

Whole-grain foods, such as whole-wheat bread, oatmeal, and brown rice.

Other grain foods include pasta, cereal, bagels, bread, tortillas, couscous, and crackers.

Fresh fruits, canned, frozen, or dried.

Fresh vegetables, canned (without salt), frozen or dried.

Canola and olive oils, and soft margarines made from these oils, are heart healthy. However, you should use them in small amounts because they're high in calories.

You also can include unsalted nuts, like walnuts and almonds, in your diet as long as you limit the amount you eat (nuts also are high in calories). Foods that are high in saturated and trans fats and cholesterol, raise your risk for heart disease, so they should be limited.

Saturated fat is found mainly in fatty cuts of meat, such as ground beef, sausage, and processed meats (for example, bologna, hot dogs, and deli meats), Poultry with the skin, high-fat dairy products like whole-milk cheeses, whole milk, cream, butter, and ice cream, lard, coconut, and palm oils, which are found in many processed foods.

Trans fat is found mainly in foods with partially hydrogenated oils, such as many hard margarines and shortening, baked products and snack foods, foods fried in hydrogenated shortening.

Cholesterol mainly is found in egg yolks, organ meats, such as liver, shrimp, whole milk or whole-milk products, such as butter, cream, and cheese.

Reducing foods and drinks with added sugars, like high fructose corn syrup, is important. Added sugars will give you extra calories without nutrients like vitamins and minerals. Added sugar is found in many desserts, canned fruit packed in syrup, fruit drinks, and non diet drinks. Check the list of ingredients on food packages for added sugars like high-fructose corn syrup. Drinks that contain alcohol also will add calories, so it's a good idea to limit your alcohol intake.

Food habits have changed not only amongst the urban elites, but even in the rural population. With mechanization of the labour, most of the rural populations who were physically very active, have now become less laborious. The quantity of food consumption remained the same or increased. More energy intense food consumption habits with less physical

activities is the main cause of lifestyle disorders like diabetes, hypertension even among the rural population. This can be seen when anyone who has eaten out lately. In fact, over the past 40 years, portion sizes have grown significantly. Cutting back on portion size is a good way to eat fewer calories and balance your energy intake.

Studies have shown that we all tend to consume a certain quantity of food. Knowing this, you can lose weight if you eat foods that are lower in calories and fat for a given amount of food. For example, replacing a full-fat food product with a low-fat product that weighs the same helps you cut back on calories. Another helpful practice is to eat foods that contain lot of water, such as vegetables, fruits, and soups.

Being physically active and eating fewer calories will help you lose weight and keep weight off over time. Weight should be reduced gradually.

Tips to reduce body weight:

Never use drugs for losing weight, it can be dangerous
Diets which you are using to reduce weight should be rich in proteins and low in carbohydrates and fats
Increase the consumption of fruits and vegetables
Eat at frequent intervals
Decrease the consumption of sugar, salt, fatty foods, refined foods, soft drinks and fast food.
Prefer low-fat milk/ toned milk.
Include physical activity in your daily routine like aerobics, walk, yoga etc.
Health Tips

Prefer homemade foods against fast food.
Avoid junk foods as they are a major cause of obesity.
Eat raw fruits and vegetables whenever possible. It is even preferable to have fruits and raw vegetables instead of munching on snacks.
Limit consumption of sugar and unhealthy processed foods.
Keep your salt intake to less than 5 grams per day as it helps to prevent hypertension, and reduces the risk of heart disease. Prefer iodized salt.
Avoid trans fats that is found in processed food, fast food, snacks, fried food, frozen pizza and cookies.
Serve yourself small portions of high calorie foods and large portions of healthy foods like vegetables, salads and soups.
Good nutrition need not always be expensive. You can get all the nutrients from low cost foods items as well like beans and lentils, eggs, jaggery, seasonal fresh fruits and green leafy vegetables.
Don't be choosy over the foods you eat. It might relish your taste buds but it would lead to imbalanced nutrition.
Eat fresh foods with the minimum of processing.
Eat raw vegetables whenever possible. If you need to cook them, use as little water as possible because many nutrients are destroyed by heat or boiled water.
Eat fruits and vegetables with skins (apart from carrots, which can absorb toxins from the soil). Wash them thoroughly first.
Don't cut, wash or soak fruits and vegetables until you are ready to eat them.

Avoid replacing meals with snack foods.