



Food and your life stages

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Abstract

Our body is a mix of complex system and organs that perhaps gets affected by everything and anything around us – the environment we live in, pollution, the food and drinks that we consume, our sleeping ways, the way we involve in daily activities and all. Some of these factors are beyond the reach of our control, whereas, certain things are absolutely within the parameters of our control, like our diet and food choices. Whenever we eat or drink something, our body processes them and absorbs the simple yet essential minerals, vitamins, fats, proteins, carbohydrates and even the water from these foods and drinks and converts them into our blood and provides us the energy, so that it could keep us healthy and growing. The nutrition levels in food and drinks that we consume are vital to our health. It directly impacts our body and health both. It is why, the importance and need of nutritious foods is to be known by all, so that we all could live a healthy and happy life. World Health Day, celebrated across the globe every year on the 7th of April, is a global effort made to spread the message of good food and good nutrition for a good and healthy life. There are millions around the planet, who do not have access to even the basic necessities in life like food and health care. It is an effort to raise awareness and help people understand the value of nutrition, health and healthy living.

Keywords: food, life cycle, diet, disease, nutrition, balanced diet, nutrients, processing

Introduction

Nutrition plays a great role in our daily life. The food or liquids affect our body and health because each food or liquid contain particular nutrition which is very necessary for our physical and mental growth. A particular level of any particular nutrition is essential for our body. So we should know that what food we have to take, how much and what type of nutrition contain a particular food. The role of food science in human nutrition includes – food processing, food fortification and enrichment with nutrients not present in food or lost during the processing, and also preservation and storage of food. Food is something that provides nutrients. The nutrition value is more important for any individual's health. The food or liquids whenever we take it affect our body and health as well both. So it is very important that we should be more aware of the foods or liquids whatever we take in our daily life. A large number of diseases occur only due to wrong diet. Some certain diet may itself cause some disease or alter the course of a known disorder such as diabetes, heart or kidney disease.

Why Nutrition is important for us?

As we know that food and water is necessary to build up our body and keep it healthy. Every good food and liquid contains some important nutrition like proteins, carbohydrate, fats, some vitamins, minerals and water. These all play different role to keep our body healthy and build new cells in our body.

These are the important nutrition and their role in our body

Protein

Protein helps our body to build muscles and strong immune system. Basically proteins are made up of long chains of

amino acids. There are 22 different types of amino acid and our body needs all these amino acid to function properly. Protein is abundant type of nutrient in our body that builds new tissues and repairs all damaged cells in our body. It also helps in formation of hormones and enzymes which play variety of roles in our body such as metabolism and sexual development. There are many types of protein that play different types of important role in our body. For example collagen is a protein and it gives the strength, elasticity and composition of our hair and skin. Some of the good protein sources are lentils, low-fat dairy products, tofu, nuts, seeds, peas, tempeh. Some common foods such as whole grain bread, potatoes, corn and pasta also have protein. Soya protein is the most essential and strong protein and it is equal to any animal origin protein.

Carbohydrates

Carbohydrates give us energy. This is an ideal source of energy for the body because carbohydrates converted more readily into glucose. It helps our body to supply the energy for the formation of cellular constituent. Carbohydrates are made up of three compounds Carbon, Hydrogen and Oxygen formed by plants. There are four types of carbohydrates are important - Sugar, Starches, Fiber and Gum. If carbohydrates taken regularly it doesn't cause any weight gain, unless like other food group. There are two types of carbohydrates - Complex and Simple. Efficiency of carbohydrates can cause the production of ketones in the body, it can results into a condition known as ketosis. The good examples of carbohydrates are breads, potatoes, pasta, soda, chips, candies/sweets, cookies/biscuits, puddings, cakes, sugar, bananas etc.

Fats

Fat provides us extra energy. It is a nutrient and a particular amount of fat is necessary for our body. It doesn't always make us fat. It plays a role to insulate our bodies by giving us protection from sudden changes in temperature and also protects our vital organs. Fats consist of a wide group of compounds that are soluble in organic solvents and insoluble in water. Fats provide 9 calories per gram. When dietary fat is digested, fatty acids are produced. It is also important for healthy skin and blood pressure regulation. There are two types of fats: Saturated (solid at room temperature) and Unsaturated (liquid at room temperature). To obtain an adequate amount of linoleic acid, one of the few fatty acids the body cannot produce on its own. Any adult needs one tablespoon of unsaturated fat daily. Saturated fats mainly occur in dairy products like butter, cream, cheese and some chocolates. The source of unsaturated fats are soybean, sunflower and corn oils.

Vitamins

A vitamin is an organic compound, it regulates our body processes and plays an important role to make our body function properly. The term vitamin was derived from 'vitamine', a combination word from Vital and Amine. Today a chemical compound is called a vitamin. Our body needs vitamins as substances to grow and develop normally. There are 13 vitamins necessary for our body. Some of them are A, B, C, D, E, K, vitamin B-6 and vitamin B-12. In our daily life we get all most all these vitamins from foods whatever we take. Our body can also produce vitamins D and K. Each vitamin plays specific jobs. Any particular low levels of vitamins cause deficiency disease. For example, if we don't get enough vitamin D it can cause rickets. Deficiency of vitamin 'A' can cause Night Blindness. If we eat a balanced diet we get enough essential vitamins automatically from our daily food or liquid. We don't even need to take any particular vitamin separately. Only in some cases we need to take a daily multivitamin for optimal health.

Minerals

Minerals regulate our body processes and also make body tissues. Minerals make our body work properly same as vitamins play the role but it doesn't prevent weight loss. Although we get it from our daily foods, so we don't need to take it separately. Minerals boost our immune system. Some important minerals are Chloride, Calcium, Copper, Chromium, Fluoride, Iron and Iodine. These types of minerals can be found from our daily food or liquid supplement like salt, soy sauce, milk, vegetable oils, whole grains, cheese, nuts. Water gives cells shape and acts as a medium where body processes can occur. It is the well known yet most important nutrient our body needs. It is also the most abundant type of liquid found in our body contributing 70% of our total mass. It helps to dissolve and carry the essential nutrients to all parts of the body. It is also needed to help maintain the body temperature and aids to carry away the body's waste products.

Water

In human body there are 70% of total mass is covered by water. Water gives cells shape and acts as a medium where body processes can occur. It is very necessary nutrient than available all nutrients. It is also the most abundant type of

liquid found in human body. Water helps maintain the body temperature and aids to carry away the body's waste products. We see that nutrition plays a very important role in our lives, each food and liquid contains its own nutrition value which is very necessary in our life. It could help to extend or decrease our life span as well as define our degree or livelihood. It helps in our mental and physical development as well. We must be aware about the food and liquid what we take regularly. Poor food in our daily life leads to a lifetime habit toward a healthy extended life.

Why Is Healthy Food Important In Our Daily Life?

Often, we are only concerned about pleasing our taste buds and not caring about our health and nutrition. But unfortunately, the unhealthy and convenient food that we consume daily to cut down cooking time and effort from our busy schedule poses an unimaginable threat to our bodies, fitness, and wellness.

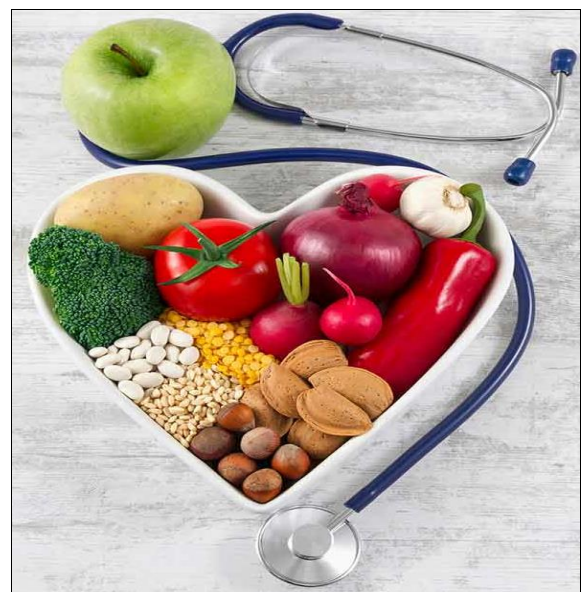


Fig 1

Effects Of Wrong Eating Habits

An immediate effect of the wrong choice of food on our health is excessive weight gain within a short span of time or obesity. Next in line are problems like diabetes, heart diseases, high blood pressure, weak bones, or maybe even slow brain development, memory loss, etc. Your well-being depends on the food you consume. So, it is imperative to eat healthily and eat right in order to stay healthy.

Healthy food is needed to stimulate the growth hormones that will increase our height gradually with age.

- Healthy and nutrient-dense food is also needed for the functioning of our system and proper nourishment. All the nutrients derived from healthy food trigger body cells and brain cells to actively run and perform their task.
- Healthy food improves the immune system, helping in disease prevention. A strong immunity fights against all disease-causing bacteria and viruses.
- It is generally advised to cut out fat from our diet. This is often mistaken as entirely excluding even healthy fats. The unhealthy fats that should not be eaten are called saturated, and trans- fats. Monounsaturated fats,

polyunsaturated fats, omega 3, and omega 6 fatty acids are very important for our health, just like proteins and vitamins. These fats get stored under skin cells which get transformed into energy required for physical and mental activities. It is important that we include these in our daily diet.

- Healthy food can help you maintain a well-shaped body without falling into the evil trap of lifestyle issues like weight gain or obesity.

A varied diet that includes plenty of nutrient-dense foods is recommended for everyone, regardless of age.

- Babies – birth to 6 months of age
- Food for babies – 6 to 12 months of age
- Food for young children
- Food for children entering their teenage years
- Older teenagers and young adults
- Food for pregnant women
- Food for breastfeeding mothers
- Food for menopausal women
- Food for older people

Our nutritional needs change with different life stages. To be fit and healthy, it is important to take into account the extra demands placed on your body by these changes.

To meet your body's regular nutritional needs, you should consume:

- a wide variety of nutritious foods
- water on a daily basis
- enough kilojoules for energy, with carbohydrates as the preferred source
- essential fatty acids from foods such as oily fish, nuts, avocado
- adequate protein for cell maintenance and repair
- fat-soluble and water-soluble vitamins
- essential minerals such as iron, calcium and zinc
- foods containing plant-derived phytochemicals, which may protect against heart disease, diabetes, some cancers, arthritis and osteoporosis.

A varied diet that concentrates on fruits, vegetables, wholegrains, legumes, dairy foods and lean meats can meet these basic requirements.

Babies – birth to 6 months of age

Babies usually double their length and triple their weight between birth and one year of age. Breastmilk generally supplies a baby with the required amounts of nutrients, fluids and energy up to about 6 months of age. It is recommended that infants be exclusively breastfed up to around 6 months of age. Breastmilk is preferred to infant formula where possible, as it contains many protective and immunological factors that benefit the baby's development. Fruit juice is not recommended for babies under the age of 6 months.

Breastmilk or correctly prepared infant formula provides enough water for a healthy baby to replace any water losses. However, all babies need extra water once solid foods are introduced.

Food for babies – 6 to 12 months of age

Solids should be introduced around 6 months of age to meet your baby's increasing nutritional and developmental needs. However, breastfeeding should continue until 12 months of age and beyond, or for as long as the mother and child desire.

Different societies have their own traditions about which food is more appropriate to start feeding a baby with. Culturally appropriate foods and preparation methods should be encouraged when these are nutritionally adequate. As a baby is gradually weaned from the breast or bottle and new solids are introduced, there may be reduced body stores of iron. To maintain nutrient body stores:

- Give your baby foods that are rich in iron and zinc, such as iron-enriched infant cereals, pureed meats and poultry dishes, cooked plain tofu and legumes/soy beans/lentils. Iron-enriched rice-based cereals are frequently recommended as the first food to be introduced, as there is the additional benefit of a lower risk of an allergic reaction.
- Foods can be introduced in any order, provided the texture is suitable for your baby's stage of development. Foods range from fruits and vegetables (for vitamin and mineral content) to meat, poultry, fish and whole eggs.
- Do not add salt, sugar or honey to your baby's food. It is unnecessary.
- Avoid cow's milk as a drink in the first 12 months. Small amounts can be used in cereals and custards. All milk used should be pasteurised.
- Whole fruit is preferable to fruit juice. Avoid juices and sugar sweetened drinks.
- Put your baby to bed without a bottle, or take the bottle away when they have finished feeding to minimise long-term exposure of their teeth to sugar-containing liquids.
- Avoid whole nuts, seeds or similar hard foods to reduce the risk of choking.
- Introduce foods one at a time. Offer new foods once every 3 to 4 days to avoid confusion and to rule out food allergy and sensitivity.
- Feed babies during any illness and feed up after illness. Give ample liquids if your baby has diarrhoea.
- Cancer Council recommends that babies under 12 months are not exposed to direct sun during the daily sun protection times (when the UV Index is 3 or higher). If you are concerned about your child's vitamin D levels, see your doctor.

Food for young children

Once a child is eating solids, offer a wide range of foods to ensure adequate nutrition. Young children are often picky, but should be encouraged to eat a wide variety of foods. Trying again with new foods may be needed for a child to accept that food. As many as 8 to 15 times may be needed. During childhood, children tend to vary their food intake (spontaneously) to match their growth patterns. Children's food needs vary widely, depending on their growth and their level of physical activity. Like energy needs, a child's needs for protein, vitamins and minerals increase with age. Ideally, children should be accumulating stores of nutrients in preparation for the rapid growth spurt experienced during adolescence. Appropriate weight gain and development will indicate whether food intake is appropriate. Food-related problems for young children include obesity, tooth decay and food sensitivities.

Recommendations include

- If a child is gaining inappropriate weight for growth, limit energy-dense, nutrient-poor snack foods. Increase your child's physical activity. You could also limit the amount of television watching.
- Tooth decay can be prevented with regular brushing and visits to the dentist. Avoid sugary foods and drinks, especially if sticky or acidic.
- Ensure your child has enough fluids, especially water. Fruit juices should be limited and soft drinks avoided.
- Reduced-fat milks are not recommended for children under the age of 2, due to increased energy requirements and high growth rate at this age.
- Be aware of foods that may cause allergic reactions, including peanuts, shellfish and cow's milk. Be particularly careful if there is a family history of food allergy.

Food for children entering their teenage years

The growth spurt as children move into adolescence needs plenty of kilojoules and nutrients. For girls, this generally occurs around 10 to 11 years of age. For boys, it occurs later, at around 12 to 13 years.

Recommendations include

- The extra energy required for growth and physical activity needs to be obtained from foods that also provide nutrients, instead of just 'empty calories'.
- Takeaway and fast foods need to be balanced with nutrient-dense foods such as wholegrain breads and cereals, fruits, legumes, nuts, vegetables, fish and lean meats.
- Milk, yoghurt and cheese (mostly reduced fat) should be included to boost calcium intake – this is especially important for growing bones. Cheese should preferably be a lower salt variety.
- Adolescent girls should be particularly encouraged to consume milk and milk products.

Older teenagers and young adults

Moving away from home, starting work or study, and the changing lifestyle that accompanies the late teens and early 20s can cause dietary changes that are not always beneficial for good health.

Recommendations include

- Make a deliberate effort to keep physically active.
- Limit alcohol intake.
- Reduce the amount of fats and salt in the daily diet.
- Be careful to include foods rich in iron and calcium.
- Establish healthy eating habits that will be carried on into later life.

Food for pregnant women

A pregnant woman should concentrate on increasing her nutrient intake, rather than her kilojoule intake, particularly in the first and second trimesters. In Australia, pregnant women are expected to gain about 10 to 13 kg during pregnancy. However, this depends on the pre-pregnancy weight of the mother.

Recommendations include

- No 'crash dieting', as this can have a negative impact on the baby.
- No 'eating for two', as this will lead to unnecessary weight gain. A healthy pregnancy only requires about an extra 1,400 to 1,900 kilojoules a day during the second and third trimester, which is equivalent to a glass of milk or a sandwich. Concentrate on diet quality rather than quantity.
- Accommodate cravings, but don't let them replace more nutritious foods.
- Nutrients for which there are increased requirements during pregnancy include folate, iron, vitamin B12 and iodine.
- Iron is required for oxygen transport in the body. Iron supplements can be advised by your doctor during pregnancy, but do not take them unless your doctor recommends them. Increasing vitamin C intake can help increase iron absorption from foods.
- Folate is important 3 months before and in the first trimester of pregnancy to avoid neural tube defects (like spina bifida) in the baby. All women of childbearing age should eat high-folate foods (such as green leafy vegetables, fruits and legumes). If planning for pregnancy, it's important to obtain 400 µg folate/ day and if you are pregnant, this increases to 600 µg/day. This can be obtained from a folate supplement and a diet high in folate-rich foods (remember to talk to your doctor first). It is now mandatory for all bread-making flour to be fortified with folic acid (a form of folate that is added to foods). This will help women reach their recommended intake of folate.
- Iodine is important for normal growth and development of the baby. Iodine supplements are often advised during pregnancy to meet the increased needs, as food sources (such as seafood, iodised salt and bread) are unlikely to provide enough iodine. Talk to your doctor about this.
- The recommended intake of calcium does not specifically increase during pregnancy. It is, however, very important that pregnant women do meet calcium requirements during pregnancy.
- No one knows the safe limit of alcohol consumption during pregnancy. Recommendations are to not drink at all.
- Pregnant women are advised to avoid foods that are associated with increased risk of the listeria bacteria (such as soft cheese and cold seafood) and to be careful with foods that are more likely to contain mercury (such as flake). Listeria can seriously affect your growing baby.
- Being physically active has many benefits. If you are active and fit, and are experiencing a normal pregnancy, you can remain physically active during your pregnancy. Otherwise, consult your doctor for advice. Drink plenty of fluids.
- Do not smoke – both direct and passive smoking is associated with growth retardation, increased risk of spontaneous abortion, stillbirths, placental complications and low birth weight.

Food for breastfeeding mothers

Breastfeeding mothers need a significant amount of extra energy to cope with the demands of breastfeeding. This

extra energy should come in the form of nutrient-dense foods to help meet the extra nutrient requirements that also occur when breastfeeding. Vegan mothers who are breastfeeding (and during pregnancy) should take a vitamin B₁₂ supplement.

Recommendations include

- Eat enough food – breastfeeding burns through extra kilojoules.
- Eat foods that are nutrient dense – especially those foods that are rich in folate, iodine, zinc and calcium.
- Eat and drink regularly – breastfeeding may increase the risk of dehydration and cause constipation. Fluid needs are approximately 750–1000 ml a day above basic needs.
- Women should continue to avoid drinking alcohol while breastfeeding.

Food for menopausal women

Thinning of the bones is common in postmenopausal women because of hormone-related changes.

Recommendations include

- Eat foods rich in calcium—such as milk or, if necessary, take calcium supplements as prescribed by a doctor.
- Weight-bearing exercises—such as walking or weight training can strengthen bones and help maintain a healthy body weight.
- A high-fibre, low-fat and low-salt diet—a diet high in phytoestrogens has been found to reduce many symptoms of menopause, such as hot flushes. Good

food sources include soy products (tofu, soymilk), chickpeas, flax seeds, lentils, cracked wheat and barley.

- A variety of wholegrain, nutrient-dense food – wholegrains, legumes and soy-based foods (such as tofu, soy and linseed cereals), fruits and vegetables, and low-fat dairy products.

Food for older people

Many people eat less as they get older – this can make it harder to make sure your diet has enough variety to include all the nutrition you need.

Recommendations include

- Be as active as possible to encourage your appetite and maintain muscle mass.
- Remain healthy with well-balanced eating and regular exercise.
- Eat foods that are nutrient dense rather than energy dense, including eggs, lean meats, fish, liver, low-fat dairy foods, nuts and seeds, legumes, fruit and vegetables, wholegrain breads and cereals.
- If possible, try to spend some time outside each day to boost your vitamin D synthesis for healthy bones.
- Limit foods that are high in energy and low in nutrients such as cakes, sweet biscuits and soft drinks.
- Choose foods that are naturally high in fibre to encourage bowel health.
- Limit the use of table salt, especially during cooking.
- Choose from a wide variety of foods and drink adequate fluids.
- Share mealtimes with family and friends

Table 1

Pregnancy*	Increased requirements: energy, protein, essential fatty acids, vitamin A, vitamin C, B-vitamins (B1, B2, B3, B5, B6, B12, folate, choline) & calcium, phosphorus,** magnesium, potassium, iron, zinc, copper, chromium, selenium, iodine, manganese, molybdenum
Lactation*	Increased requirements: vitamins A, C, E, all B-vitamins, sodium, magnesium** Decreased requirements: iron
Infancy, childhood*	Increased requirements: energy, protein, essential fatty acids
Adolescence*	Increased requirements: energy, protein, calcium, phosphorus, magnesium, zinc (females only)
Early adulthood (ages 19-50)	Increased requirements for males, compared with females: vitamins C, K; B1, B2, B3, and choline; magnesium, zinc, chromium, manganese Increased requirements for females, compared with males: iron
Middle age (ages 51-70)*	Increased requirements: vitamin B ₆ , vitamin D
Elderly (age 70+)*	Increased requirements: vitamin D Decreased requirements: energy; iron (females only)
Changing Nutrient Needs Through the Life Cycle	

* Relative to adult requirements for those 19-50 years of age (and on a per-kg basis for macronutrients).

** Applies only to individuals under age 18.

Conclusion

Nutrition is key to achieving optimal health, and supporting children by providing them with access to healthy food and nutrition education can help improve their nutrition and overall health. Teaching science-based nutrition education that focuses on overall diet quality and the importance of choosing wholesome foods encourages children to build healthier eating habits. Educators and health professionals can access free, science-based nutrition education resources to teach children and families about the importance of healthy eating for lifelong good health. Nutrition is an important part of health, supporting development at each stage of life, beginning with pregnancy and continuing through infancy, early childhood, adolescence and adulthood. People have different nutritional needs at each life stage, which is why the expanded 2020–2022 Requirements for energy and micronutrients change throughout the life cycle. Although inadequate intake of

certain micronutrients is a concern, far greater problems come from the dietary excesses of energy, saturated fat, cholesterol, and refined carbohydrate, which are fueling the current epidemics of obesity and chronic disease. Clinicians can assist patients in choosing foods that keep energy intake within reasonable bounds, while maximizing intakes of nutrient-rich foods, particularly vegetables, fruits, legumes, and whole grains.

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