10 Let us fulfill our nutritional needs

If we do not get the required amounts of nutrients from food we may get various illnesses and our body will become weak. Therefore to prevent getting diseases and to maintain a healthy life we need to know about the nutrients in food and the different stages in life we need them most.

In the previous grades you would have studied on the nutrients needed for life, problems with nutrition, food pyramid, nutrients required for the family, points to consider when selecting food, consuming and storage of food so that the nutrients are not destroyed.

In this lesson you will learn about the different nutrients needed during different stages in our life cycle, nutritional needs in special groups, various myths regarding nutrition and how you could contribute to choose nutritious food.

Our nutritional needs

Food provides our body with energy, repairs our body and protects our body from various diseases. The different nutrients found in our food help to do this work.

The main nutrients needed in our body are carbohydrates, proteins and lipids.
The micro nutrients needed in our body are vitamins and minerals.

Food can be divided into six groups depending on the nutrients it supplies.

1. Grains and yams
2. Vegetables
3. Fruits
4. Meat, fish and eggs
5. Pulses and seeds
6. Milk and milk products

Figure 10.1

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Activity

Make a chart containing the macro and micro nutrients, foods that contain them and their main functions.

A balanced diet is one with the right amount of each nutrient that should be provided by food. It is important to have three main meals and two supplementary meals that are well balanced. When preparing a balanced meal you can make use of the knowledge gained in previous grades from the food pyramid and the food plate.

Activity

Divide into two groups and make charts on the food pyramid and the food plate. Hang the charts in your classroom. The grade seven text book will be useful for this.

Stages where our nutritional needs change

Find below are the stages a baby goes through after being in the mother's womb.

Table 10.1

Age	Stage
Birth to one year	Infant
1 year - 9 years	Childhood
10 years - 19 years	Adolescence
20 years - 59 years	Youth and middle age
60 years and above	Old age

Let us learn about the different nutritional needs during different stages in life.

Nutritional needs of an infant

This is the period from birth to one year. During the first two years the brain, bones, muscles and connective tissues show intense growth.

The following nutrients mentioned below are needed for this.

- Proteins
- Carbohydrates
- Fats
- Minerals - Calcium, Iron, Zinc
- Vitamins

All these nutrients are needed at optimal levels.

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Until six months of age only food for the baby is breast milk and all the nutrients are supplied by it. During this period the baby's nutrition as well as the mother's is very important. After six months of age complementary feeding is started. This is a gradual introduction to solid food.

Figure 10.2 - Complementary feeding

Food items that can be given after six months

Table 10.2

Food	Nutrients
Rice, green gram, cowpea, chick pea	Carbohydrates and proteins
Green leaves	Minerals and vitamins
Fish, meat, milk, eggs	Proteins, minerals, vitamins, iron, lipids
Fruits	Vitamins, minerals
Oil, butter, margarine	Lipids

Activity

There is a special meal that is prepared for infants called mixed rice. Write down the foods gradually introduced when preparing this.

When preparing food for a baby it is important to be particular about the cleanliness and freshness of the food. It is also important to be particular about the cleanliness of the utensils used to prepare the food.

Nutritional needs during childhood

Childhood is the period between one year and ten years. During this stage the nutritional requirements for boys and girls are the same. However, on the level of

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activity the nutritional needs may differ. A child engaged in sports will need foods that provide energy.

During this stage as the amount of food consumed at a meal is limited, it is important to have two or three snacks in addition to the three main meals.

There is adequate growth and protection from illnesses when nutritious food is provided for the children. When adequate nutrition is not provided there is malnutrition.

Research has shown that illness such as diabetes and obesity can set in during childhood when healthy dietary habits are not followed. To prevent non communicable diseases in later life it is important to have healthy dietary habits during childhood.

Additional knowledge

Child and maternal health programmes have been implemented to reduce malnutrition in childhood.

- Promotion of breastfeeding
- Giving adequate nutrition to sick children
- Providing adequate and healthy supplementary foods
- Monitoring growth
- Initiating child friendly hospital programmes
- Providing vitamin A mega dose
- Providing food packets fortified with micronutrients to children under two years of age, in areas where there are nutritional deficiencies
- Providing supplementary food to children with malnutrition eg: Thriposha
- Providing special food for children with severe malnutrition
- Providing zinc supplements when having diarrhoea
- Providing worm treatment
- Promoting proper hand washing
- Measuring body mass index and determining the nutritional level by school health clinics.
- Giving advice to mothers on nutrition
- Inspecting the teeth and treatment for dental diseases
- Providing school children with iron and folic acid supplements on a daily basis
- Introducing a program on healthy living and life skills

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Nutritional needs during adolescence

Age of 10 to 19 years is known as adolescence. It is during this period that there is an accelerated growth in height and weight. Therefore, the need for nutrition is more. During this phase, the nutritional requirements differ depending on the age, gender height, weight and level of activity. During this period extra amounts of protein, iron, iodine, calcium, vitamins (A, B12, C, D) and folic acid are needed. During this period too the meals have to be balanced.

Activity

Below is a chart with nutritional needs during adolescence. Fill in the third column in this chart.

Need	Nutrients	Type of food
1. Rapid growth of body	Protein, iron, iodine, vitamin A, B12, C, D, Folic acid	
2. Rapid growth of the skeletal system	Calcium, Phosphorus	
3. To prevent anemia in girls after puberty	Iron	
4. In boys due to increased level of activity	Iodine, vitamin A, B, C, iron Carbohydrate Lipid	
5. Muscle growth in boys	Protein	

Bad eating habits of adolescents

1. Missing the breakfast
2. Eating junk food and fast food (Sausages, french fries, food which are high in sugar, fat and salt)
3. Consuming sweetened fizzy drinks
4. Consuming alcohol

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Figure 10.3 - Junk food and fast food

When get used to the above habits the body get excess calories and limited amount of nutritious food. This leads to getting various illnesses.

Consequences of bad food habits during adolescence

1. Overweight and obesity
2. Deficiency of micronutrients
3. More susceptible to develop non communicable diseases during adulthood
4. More gastrointestinal diseases
5. Menarche starts early or late/ irregular menstruation in girls
6. Retarded growth of offspring
7. Musculoskeletal diseases during pregnancy and adulthood

Nutritional needs in youth and middle age

This is the period between the ages 20 and 59 years. As they have passed adolescense they are also considered as adults. The nutritional requirements of this stage vary depending on the gender and the occupation of the person.

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Additional knowledge

Energy requirement of a person per day in kilo calories

- Man with a high level of activity - 2700
- Man with a low level of activity - 2200
- Woman with a high level of activity - 2300
- Woman with a low level of activity - 2000

Activity

Below is a chart showing the special requirements of an adult and the nutrients needed. Fill in the third column.

requirements	nutrients	Examples of food
To prevent weak bones	Calcium and Vitamin D	
For the regeneration of cells and maintain immunity	Protein	
Protection from illnesses	Vitamins and minerals	
To maintain a healthy digestive system	Food with fibre	

Consequences of bad food habits in youth and middle age

1. Diabetes due to consumption of food with high sugar content.
2. High blood pressure and heart problems due to consumption of food with increased salt.
3. Obesity, heart attacks and strokes due to consumption of food with high fat content.
4. Obesity due to consumption of foods with high carbohydrate content.

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Figure 10.4 - Obesity

Adults have to be particular about their nutritional needs. The dietary requirements change if there are illnesses and medical advice should be sought whenever needed. Engaging in daily exercise is important.

Nutrional needs in old age

Our bodies grow till we are 20 to 25 years of age. The functioning of the body gradually reduces as we reach old age. By having a good balance in nutrition, our bodies will function at optimal level.

Changes in old age

1. Reduction in appetite
2. Growth drops
3. Becomes less active
4. Develops diseases. eg: diabetes, heart problems
5. Digestion gets weak
6. Become obese or wastes

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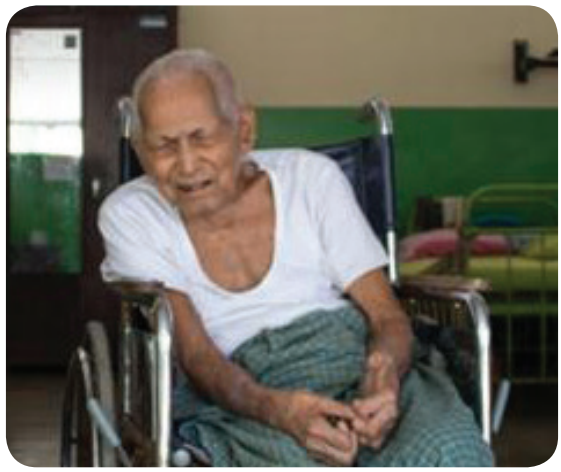

Figure 10.5 - Become less active

Ways of ensuring good nutrition during old age

- Eating food that increases appetite
- Eating food that generates energy
- Eating food that has simple proteins to help in growth
- Take fibre rich food regularly
- Increase water intake
- Eat vegetables and fruits that help easy digestion
- Control the intake of foods high in sugar, oil and salt
- Eat low calorie foods
- If having diabetes, high cholesterol or cardiovascular diseases take meals as advised by the physician
- Select food with a soft texture which is easy to bite and chew

In addition, engage in suitable exercises whenever possible and lead an active lifestyle.

In the last part of old age it is important that solid, semisolid and liquid food described below is consumed.

Table 10.3

Solid food	Semisolid and liquid food
Pulses	Porridge
Vegetables	Soups
Fruits	Fruit juice
	Milk
	Barley
	Semolina

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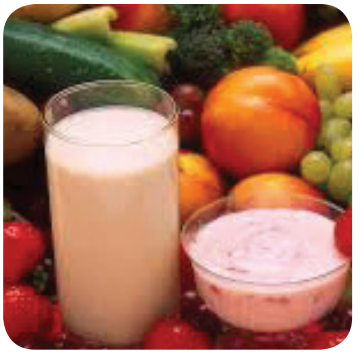


Figure 10.6 - Solid, semisolid and liquid food

Nutritional needs in special groups

The same way our nutritional needs change during our life cycle they also change with the different situations in our life.

1. Pregnant mothers
2. Breast feeding mothers
3. Sportspersons
4. People who do heavy work
5. Sick persons
6. Vegans

Activity

Write five types of food that can be consumed by people who have special nutritional needs. You may get some advice from teachers and elders.

Let us study the nutritional requirements in each situation mentioned above

Nutritional reuirements of a pregnant mother

The period a fetus is in the uterus of a mother is known as the gestational period. It is approximately 280 days. During this period the nutritional needs are very important to both mother and baby. If the mother and baby do not get the required nutrients during this period they may get various illnesses and even face life threatening situations.

After pregnancy the mother may get various nutritional deficiencies.

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Additional knowledge

Child and maternal programmes have been implemented to reduce malnutrition in childhood.

- Low birth weight
- Premature birth
- Anaemia
- Mental retardation
- Deformities in the brain and spinal cord

Activity

Write some menus suitable for a mother during pregnancy in the chart given below.

Breakfast	Lunch	Dinner

In addition to the three main meals people are used to have a snack around 10am and 4pm. During pregnancy in addition to the two snacks, several snacks can be consumed in between meals. This is because it is more comfortable to eat in small amounts in pregnancy.

The pregnant mother should be reviewed by the midwife. The midwife will educate the mother on the nutritional needs. In addition, the mother will be given vitamins, minerals and medicines to prevent certain diseases.

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Figure 10.7 - Reviewed by the midwife

Additional knowledge

Below are some nutrients supplements and medicines given at maternal clinics during pregnancy.

Folic Acid tablets - initial 3 months of pregnancy (It is better to take folic acid when you plan for a pregnancy)

- Iron tablets - after the 3rd month of pregnancy.
- Vitamin C tablets - after the 3rd month of pregnancy.
- Calcium tablets - after the 3rd month of pregnancy.
- Worm treatment - after the 3rd month of pregnancy.
- Tetanus vaccine -

  1st pregnancy - 1st dose at 3 months
  - 2nd dose at 5 months

  2nd pregnancy - 3rd dose

  3rd pregnancy - 4th dose } booster dose

  4th pregnancy - 5th dose }

  (If you have received the adults tetanus / diphtheria vaccine and get pregnant within 10 years of receiving it, no need to take the tetanus vaccine.)
- Vitamin A mega dose - After delivery (Within 2 weeks)

In addition, a pregnant mother should drink a minimum of 8-10 glasses of water per day.

It is important to know about the development of the foetus as the mother gains weight gradually during pregnancy. The BMI of the mother is checked before 10 weeks at the maternal clinics. After which the weight is checked at the clinic to see if there is adequate weight gain.

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Nutritional needs of a breast feeding mother

After child birth the glands in the mother's breast are activated and milk is produced. This is known as breast milk. The importance of breastmilk is shown below.

- Provides natural immunization
- Reduces allergies
- Free of germs
- All the required nutrients are provided
- Necessary amount of water is provided

- Can be given in a hygienic manner
- Can be given to the baby at any moment

Figure 10.8 - Breast feeding

During the first six months after birth, the baby gets nutrition only from breastmilk. Therefore, the mother should have good nutrition to provide the baby with all the necessary nutrients and water.

Activity

Make a menu for a breast feeding mother so that it contains all the nutrients

Food	Nutrients in the food

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A breast feeding mother makes about 850 ml of milk per day. The milk contains a large amount of calcium. Thus the mother should take extra calcium. Additional meals and water should also be taken. The meals should contain macro and micro nutrients.

Special nutritional needs for a sportsman

Nutrition is important for all but a sportsman has to pay more attention to his nutrition than others. By paying attention to his nutritional needs his sporting skills can be improved, dehydration can be prevented and his wounds will heal faster. A sportsman needs more calories than an ordinary person.

A sportsman needs lipids and carbohydrates for his energy requirements. During extra training additional proteins are needed. Proteins are needed for the growth of tissues and muscles. Salts and extra carbohydrates are needed to prevent muscle fatigue. Lipids are needed to provide energy when engaging in training for long periods.

The control of weight is also important when such nutrients are taken in this manner. This should be done under the supervision of a coach.

eg: swimmers and gymnasts should be strong but also light weight. In boxing and weight lifting strong muscles are needed.

To prevent dehydration adequate water should be drunk and if engaged in vigorous exercises or activities adequate energetic food and salts should be consumed.

Advantages for a sportsman when getting proper nourishment

1. Helps to perform optimally
2. Body will become stronger
3. Will be healthy
4. Good control of weight
5. Development of mental faculties
6. Body composition and growth will improve
7. Faster recovery after an accident

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Figure 10.9 - Helps to perform optimally

Nutritional needs of a sick person

All sick people have to be given food as adviced by the doctor.

The food provided to a patient should be of proper nutrition. If there is a nutritional deficiency the food given has to be one that corrects the deficiency. A patient has to be given food at the correct time and in correct amounts. The food has to be prepared with less oil, chillies and sugar. Food can be given as solids, semisolids or liquids as necessary.

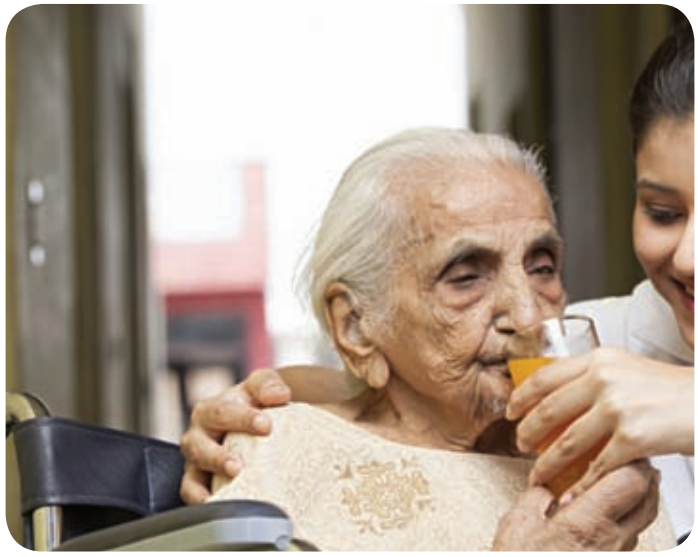

Figure 10.10 - Feeding a sick person

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In addition to the information given above different menus are used for different illnesses.

eg: patient with diabetes - food that has less sugar
patient with heart disease - food with less oil
patient with high blood pressure - diet with less salt

Activity

Write a list of illnesses and the specific food recommended for each of them

Illness	Type of food

Nutritional needs of a vegan

Vegan is a person who takes only food of plant origin and they should pay special attention to their nutritional needs. It is difficult to gain all the essential amino acids needed for the body by vegetarian foods. To complete this, a diet mixed with grains and pulses should be consumed.

In addition, vegans can get the required calcium and protein by drinking milk. Milk products like cheese, panneer, curd, yoghurt, and other dairy products should be consumed daily. Vegans should consume coconut milk, oats, soyamilk and almond milk as a substitute for animal milk.

Growing up children should preferebly not be exclussive vegans. Although you take substitute food you cannot gain all the nutrients by a vegetarian meal.

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Figure 10.11 - Substitute food for vegans

Activity

Write foods that vegans can eat to fulfil their nutritional needs

Calcium
Zinc
Iron
Protein
Lipids

Myths regarding nutrition

There are lots of programmes regarding looking after our health and improving of the standard of living. Despite these you come to know about cases of nutritional deficiencies and people falling sick. One of the main reasons for this is the myths and beliefs people have regarding nutrition. Find below are such myths and ways of overcoming them.

Table 10.4

Myth	Fact
All the expensive food for sale in the shops have a very high nutritional value.	The nutritional value of the food cannot be estimated by the price. The nutritional value depends on the nutrients, freshness, cleanliness and hygiene of the food. Due to the addition of artificial flavours and preservatives sometimes the nutritional value of expensive food can be reduced.

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Myth	Fact
Meat based food provide all the nutrients needed for the body.	Proteins, minerals, vitamins, amino acids can be found in vegetables too. eg: grains, mushrooms, tofu, leafy vegetables
Breast milk secreted initially should be cast aside. It is the milk secreted after this that should be given to the baby.	It is very important that the baby gets the initial secretion of mother's milk known as colostrum as it is very nutritious and gives immunity to the baby.
Fruits that are big are more nutritious	The nutritional level is not high due to the size of the fruit which could have extra water or more cells for the size.
Jambu and mandarins should not be given to small children	These should be given as they have a lot of vitamin C and minerals
A larg body indicates good nutrition	Having a large body does not mean the person is healthy. In diseases as well as due to unnecessary nutrition the body can be large.
Big fish have more nutritional value than small fish	Flesh of small fish is as nutritious as big fish. In adition all of small fish are also consumed when eating small fish. Therefore we can get more of micronutrients such as calcium, iron, zinc. Bones of large fish are not consumed, so the nutritional value is less.
Most food items are known to cause phlegm, gall or wind. These food make you sick	Certain foods can be allergic only to some people. Therefore food cannot be commonly labelled as unsuitable.
Green leafy vegetables should not be eaten in the night	No matter what time of the day you eat the green leafy vegetables the nutrious value remains high
Pregnant mothers should not eat small fish	Small fish contain protein as well as a large amount of micronutrients. The unborn baby in the mother's womb gets the nutrition through the umbilical cord.

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Information about artificial food is advertised in attractive manner using various mass media. Radio, TV, newspapers, magazines, books and web media are used for this purpose. But, whatever information is given by such media, such foods should not be consumed unnecessarily. You could be subjected to various diseases when you take such artificial and instant foods for a long period of time.

Activity

Make a list of the different foods advertised in the media. From the list you made, identify the food that cause unwanted effects, giving reasons.

How can we contribute to fulfill our nutritional needs

It is important that we have a good knowledge of the food we purchase and our nutritional requirements.

1. Buying food to suit each individual.

Eg: An obese person should select food that has less carbohydrates, fats and proteins.
People who have or have a family history of hypercholesteraemia should avoid food that has a lot of fat (especially animal fats).
People who have skin diseases or falling hair should increase amounts of vegetables and fruits in their meals.

2. When buying canned, bottled or packeted food you need to be aware of the date of expiery, ingredients and the standards certificate.

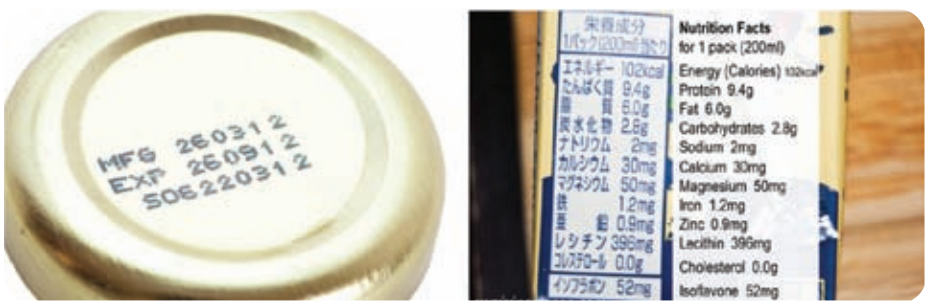

Figure 10.12 - Checking date of expiery and ingredients of the food

3. Choose natural foods over artificial or processed food.

Natural food is fresh and has more nutritional value and does not have toxins compared to artificial food.

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4. **Do not purchase fruits, green leaves and vegetables that are withered.** These food items could be withered due to chemicals that have been sprayed or due to the long duration of storage. The nutrients in such foods could be very much less, and worms and insects could be present in them.

5. **When purchasing fish it's better to buy small fish than big fish. Make sure the gills are red and the eyes of the fish are glistening.**

6. **Do not buy cans and tins that are crushed, dented or ballooned as they can have toxic chemicals in them.**

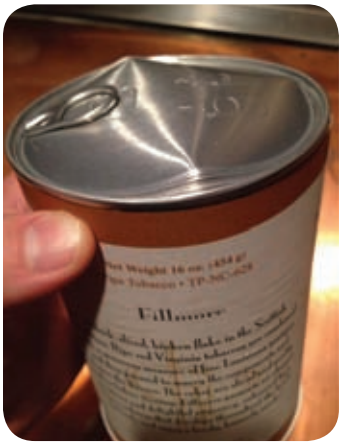

Figure 10.13 - Crushed or dented cans and tins

7. **Processed food, junk or fast food should be avoided.**

8. **Avoid consuming food with added artificial flavours, colours, dyes and preservatives.**

9. **When preparing food, use methodology and ingredients that increase its nutritional value**

   Eg: Soaking gram prior to cooking.
   Preparing greengram and cowpea after sprouting.
   Eating different coloured food.
   Adding grated coconut, lime juice, maldive fish to green leaves.
   Preparing a dish with different types of food.
   Avoid drinking tea, coffee immediately after meals.

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Figure 10.14 - Sprouting green grams

Summary

Our nutritional needs vary at different stages of our life cycle such as childhood, adolescence, youth, middle age and old age.

There are also special nutritional needs for special situations in our life like pregnant mothers, feeding mothers, sports persons, invalids and vegans.

We must avoid myths related to nutrition to avoid nutritional problems in our community.

All of us can contribute to convey correct messages regarding nutrition, in selecting, preparing and consuming of food.

Exercise

1. Name the different stages in our life cycle which have different nutritional needs.
2. What are the situations or persons that have special nutritional needs?
3. What are the aditional nutrients which should be taken by pregnant mothers?
4. Name some vitamins that should be taken by breastfeeding mothers.
5. What are the special features of food that are given to an invalid?
6. Introduce several substitute foods for a vegan friend of yours.
7. What are the benefits that a sportsmen can gain by consuming correct nutrients.
8. Write some myths regarding nutrition, in your area.
9. Give some suggestions to increase the nutritional value of the meals for your family.

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