



FOOD FUNDA

**SAFE AND NUTRITIOUS FOOD @
SCHOOL (SNF@SCHOOL)**

Health and Wellness Coordinator Training Material

What is SNF@School Initiative?

- ✓ Healthy eating patterns in childhood and adolescence ensure optimal health, growth and intellectual development , prevent macro and micronutrient deficiencies and eating disorders
- ✓ Children should be the primary targets of interventions, as they are at an impressionable age and can be motivated to make appropriate healthy modifications. In turn, they can influence the community at large.
- ✓ The school environment has the potential where healthy lifestyle habits can be inculcated among children.

Objectives:

Children are powerful change agents. Messages delivered to, and through children, have the potential to usher in behaviour change and a culture of safe and wholesome food. This is the underlying philosophy behind the SNF@SCHOOL initiative of FSSAI.

The SNF@School initiative is being undertaken to:

- ✓ Create **Health and Wellness Coordinators** and teams in each school.
- ✓ Deliver and reinforce the message of safe and nutritious food through both curricular and co-curricular activities.
- ✓ Ensure an enabling legislative and regulatory framework to promote safe and wholesome food in schools.

Roles and Responsibilities of School Health & Wellness Coordinators (SHWC)

1. Assemble a core SNF Action Group@School

- Create action group consisting of:
“SHWC, Primary/Junior/Senior wing Coordinators, Parents, Students, caterers and health professionals”
- SHWC could use the e-learning portal (FOSTAC:<http://fssai.gov.in/fostac>) to acquire knowledge and train the teachers/students.

2. Carry out a baseline assessment of nutrition in school:

To fulfill this SHWC need to have knowledge of:

- Food safety
- Nutritious food
- Healthy and unhealthy diet
- Maintaining Hygienic environment and its role in good health
- Evaluation guidelines

Resources: Training content, Yellow books & presentations, checklist for canteen

<http://snfportal.in/snf/jsp/schoolresources.jsp>

3. Design and create an SNF engagement plan:

- Design a monthly SNF plan based on Content structured (SNF Roll out Plan, yellow books, presentations) through age appropriate activities (sample activities provided on SNF portal)
- Awareness activities on SNF theme with students & parents which may be done through:
 - ❖ Energizers –weekly SNF tip of the week
 - ❖ Reassess recess – SNF megahertz – mini voiceover clips carrying a specific key
 - ❖ SNF message played over public address system and in the school cafeteria.
 - ❖ Bulletin informatic monthly board
 - ❖ Interactive activities created by & for the students– Paint a wall, Collage and poster making, Play or skit, Jingles, Photography sessions, Share your lunch etc.
 - ❖ Suno kahani
 - ❖ Theatre workshops
 - ❖ Include SNF theme in SUPW activities
 - ❖ Mascot activations

Resources: SNF Roll out Plan, yellow books, presentations

4. Ensure compliance based on legislative and Regulatory Framework provided by SNF guidelines

- Ensuring Mandatory registration of School canteen/hostel mess
- Encouraging voluntary labeling

Resources: Food Safety and Standards (Safe and Wholesome Foods for School Children) Regulations 2017

5. Implement, monitor and evaluate the action plan.

- Create a Sehat Club comprising senior students & administration staff
- Timely inspection of canteen or areas where food is handled/prepared.
- Educating parents about SNF by conducting parent Teacher meetings (PTM's)

Resources: SNF Roll out Plan, Pink Book, DART Book, Checklist for canteen

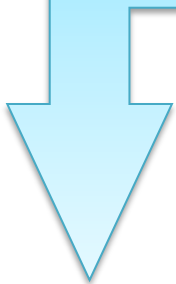
Did you
know?
??

How to be a good
Health and Wellness
Coordinator ???

You should know about:

1. What is Safe Food?
2. What is Nutritious Food?
3. What is the role of Safe and Nutritious Food on Health?

Lets find out the answers



FOOD

Food :

- Is any substance which nourishes the body and is fit to eat
- Is the source of energy and nutrients in our body
- Contains chemical components similar to those that make up the body called *nutrients*

Food and its Functions

Food performs the following functions:

1. Physiological function

- Provides energy to carry out voluntary work
- Growth or body building
- Repair or maintenance of the body cells
- Regulation of body processes
- Protective function, increasing one's resistance to infection

2. Psychological function

- Food satisfies our emotional need for love, attention and security.

3. Social function

- Food is an important part of festivals and social functions.

Introduction to Safe and Nutritious Food

Safe Food

✓ Safety of Food is a basic requirement of food quality and refers to all those hazards which make food injurious to health. It depends on following factors:

- Microorganisms – present everywhere around us
- Personal hygiene
- Factors responsible for spread of disease

If food is not handled properly, what will happen ??

Food spoilage & Food Contamination → Food borne illness/ disease

Awareness of safe and nutritious food must be concurrent with the concept of nutrition with food safety.



Nutritious Food

- ✓ Nutrition is the science of food and its relation to health.
- ✓ The way our body makes use of these nutrients is directly proportional to our health and well being.

Food Safety ???



- Microorganisms—present everywhere around us
- Personal hygiene
- Hygienic Handling of Food & Hygiene of our surrounding
- Factors responsible for spread of disease

What are Microorganisms???

DID YOU KNOW?

- ✓ Microorganisms are tiny microscopic creatures which we cannot see with the unaided eye. They cause infections or disease.
- ✓ Food is a perishable commodity. It spoils easily and permits disease causing microorganisms to grow if it is handled unhygienically .

Five types of microorganisms affect us and our food. They are:-

Viruses – The smallest. Cause Common cold, Chicken pox and Measles.

Bacteria – Main cause of food borne diseases. Some are useful, some are harmful.

Fungi - a. Yeasts and b. Molds. Are both useful and harmful. Used in bread. Spoil jams and pickles.

Algae – Affect our water supply

Parasites - a. protozoa and b. eggs & cysts of worms – the largest – Cause dysentery and worms which grow in our intestine.

Four Basic Growth Requirements of Microorganisms

Food Just like humans, microorganisms too need nutritious food to grow

Moisture Like humans they need water to grow

Temperature Microorganisms grow best at warm temperatures

Time Like humans microorganisms need time to grow

How disease spreads ???

Know the 5 F's Which Are Responsible for Spread of Disease

FOOD (contaminated food and drink infected by food handler or from the farm, diseased animals and their products)



FINGERS (unwashed hands and dirty grown fingernails)

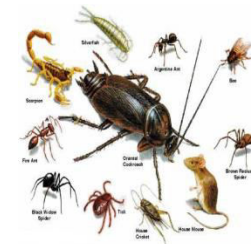


FAECES (sewage contaminated food, water and unwashed hands after using the toilet)

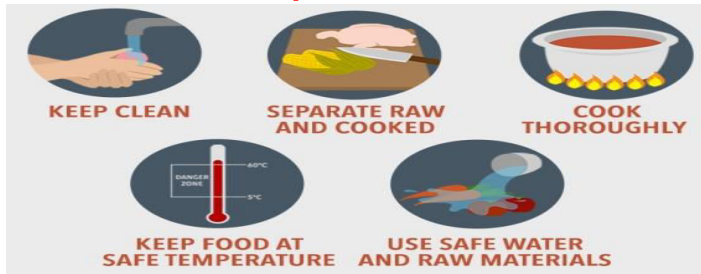


FOMITES (unclean utensils, equipment, door knobs, taps, towels)

FLIES (pests like houseflies, cockroaches, rats, mice)



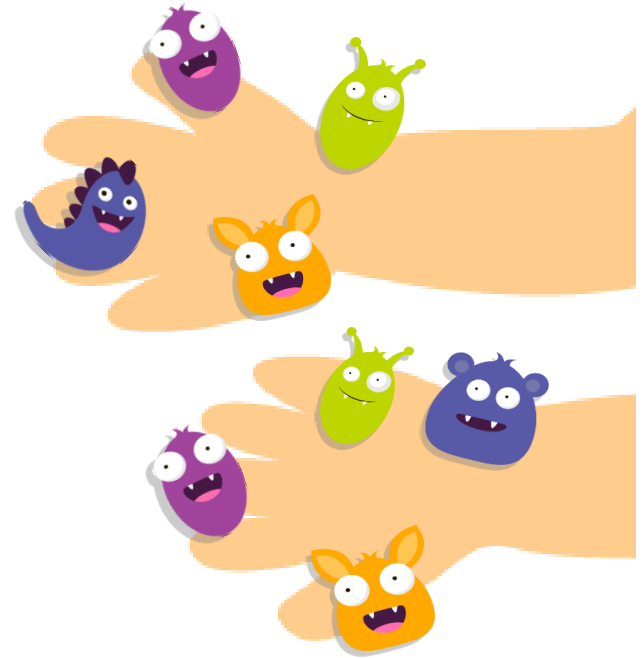
These 5 Fs' need to be controlled to keep food spoilage and food borne diseases away.



So, how can we prevent microorganisms from growing in our food...

- **Keep food and hands clean** - Wash and store all food
- **Keep food covered** - Cover food containers, wrap in cling film or aluminum foil
- **Keep food cool** - By not leaving food which can spoil for long hours in the kitchen. Keep food in the refrigerator/freezer. Keep food out of the Danger Zone.
- **Cook food well.** Keep hot food hot during mealtimes and reheat leftover food properly.
- **Add preservatives** if preserves have to be stored for long. Store food in airtight/vacuum containers.
- **Consume food in hygienic surroundings.**
- **Controlling Temperature**
 1. Low temperatures - In the refrigerator and freezer
 2. High Temperatures - During cooking. Spores may survive normal cooking temperatures.
- **Removing Oxygen** Eg vacuum packed and canned food.
- **Adding Chemical Preservatives** - To preserves like tomato sauce and fruit based squashes in permissible amounts.
- **Reducing the Moisture Content** - In evaporated and dehydrated foods making water unavailable to microorganisms.
- **Exposure to Ultraviolet Rays** - Sunlight and ultraviolet lamps are useful in sterilizing the surface of food and equipment.

As now we have learnt about the microbes



Lets find out how to keep microbes away to stay healthy

Lets focus on

- Personal hygiene
- Hygienic Handling of Food and Hygiene of our surroundings

Personal Hygiene???

Why personal hygiene ?

- ✓ Humans harbour microorganisms in and on their body.
- ✓ Microorganisms that cause food borne illnesses are present on the skin and in the nose, throat, mouth and gastrointestinal tract of the person handling food.
- ✓ These microorganisms are transmitted to food mainly through the hands and nails of the person or by accidentally coughing or sneezing on food.

So, personal hygiene should become a habit. It is a part of good grooming.

What does personal hygiene include ?

- ✓ Personal hygiene includes all personal practices which need to be followed to keep our body clean and healthy. These are:
 - ❖ Toilet Habits
 - ❖ Hand washing
 - ❖ Brushing our teeth
 - ❖ Bathing

This also involves following factors:

- ❖ Feet and Footwear
- ❖ Hair
- ❖ Jewellery
- ❖ Cut and Sores
- ❖ Sickness or illness

Wash your Hands regularly because...

Tooth brushing technique!



Brush teeth at least twice a day for two minutes with fluoridated tooth paste.

Brush preferably after every meal.

Leave the toothbrush covered or in its case to avoid germs from settling down on the moist brush.

Do not forget to use a tongue cleaner to remove the germs build up on the tongue

Visit your dentist for regular check-ups or when in pain, discomfort or in case of any food sensitivity.

Why do we need to bathe everyday?

- To wash away sweat and dirt.
- To get rid of the body odour.
- To get rid of the bacteria on our body.
- To get rid of dirt and invisible bacteria on the surface and between the toes.

To stay Fresh and clean, take a bath daily, wear clean undergarments and clothes.

The truth about hair...

- Hair is a breeding ground for bacteria if not shampooed and kept clean.
- Unclean hair causes scalp infections, dandruff and lice, and makes the scalp itch.
- Staphylococci present on the skin and scalp may get into food
- Short hair should be pinned properly while long hair need to be tied or plaited.
- Hair should not be left loose while cooking.
- Covering hair with a net, scarf or cap discourages people from touching their scalp and contaminating food. It also prevents hair from falling into food.

Good Habits at the time of food handling

- Avoid handling food with bare hands as far as possible.
- Do not pick up or serve food with bare hands
- Use a spoon, tongs or hand gloves while handling ready food items or serving food.
- Pick up cups by the handle or bottom, glasses by the base, cutlery by the handle and plates by the bottom or edge
- Use a disposable tissue to blow your nose, discard the tissue in the dust-bin and wash your hands thereafter
- Do not touch or pick your nose while handling food. Staphylococci are present in our nose and can cause food poisoning if transferred to food.

Hygienic Handling of Food

Did you know?

GOOD HYGIENIC PRACTICES (GHP) AFFECT THE QUALITY AND SAFETY OF FOOD

To achieve GHP, one should be aware of:

- ✓ What is food quality?
- ✓ What is spoiled food and contaminated food?
- ✓ How to protect food from contamination, including harmful microorganisms, poisons, allergens and foreign bodies?

Lets know about them

Food Quality

“Food quality” means the degree of excellence. The characteristics of food are such that are acceptable to all consumers on the basis of the appearance, odor, flavor, texture of the food. It also includes nutritional value of the food and purity of food.

If food is not handled properly, what will happen ??



Food spoilage &
Food Contamination



Food borne illness/
disease

How does food spoil?

What is Food Spoilage?

It is defined as decomposition & damage caused to food by various agents, making it unsuitable for consumption.

Types of Foods (on the basis of shelf life)

NON-PERISHABLE

- ✓ Stay good up to a year
- ✓ Sugar, legumes, whole grains, oil, preserves like pickles
- ✓ In a cool, dry place

SEMI-PERISHABLE

- ✓ Stay good up to a few weeks - few months
- ✓ Semolina, gram flour, vegetables like onions & potatoes, apples and frozen foods
- ✓ In well ventilated cool rooms or fridge.

PERISHABLE FOODS

- ✓ Spoil within a day
- ✓ Items we consume everyday: milk, eggs, meat, fish, poultry and most fruits and vegetables specially green leafy vegetables.

Natural
Enzymatic
changes

Microbial
action

Chemicals

Stones,
grit,
irradiation

Insects &
Bugs

Physical
damage

Air
Water
Soil
Dust

What is a contaminant?

Anything naturally introduced into the product or intentionally added during stages of the food chain from the farm to the table, which may cause harm to the consumer.

CONTAMINATED Foods is not fit to be eaten for sanitary reasons. Although food may look, smell and taste good, it may contain harmful chemicals, non-food matter and microbes. Contaminated food is also considered as spoilt.

Types of Contaminants

Biological

(rats droppings, beetles, weevils, insects body parts flies, worms bacteria, virus etc.)

Physical

(glass, metal, bone, hair, feathers, shell, stone, grit, etc.)

Chemical

(food additives, inks, heavy metals, pesticides residues etc.)

Cross Contamination

Transfer of pathogens from contaminated food (usually raw) to ready-to-eat food by direct, drip or indirect contact. It can occur at any stage during processing, transportation, storage, distribution or even consumption.

How does Cross Contamination take place?

Food to food transfer

Surface to surface transfer

Food to surface transfer

Not washing hands after handling each item

Vehicles for Cross Contamination are ...

Hands

Clothes, utensils and equipment

Food contact surfaces

Hand contact surfaces

Prevent Cross Contamination

Keep raw & cooked food apart

Store cooked food above raw food in fridge

Color code chopping boards & knives

Practice hand hygiene

To Prevent Food Contamination.....

Remember the following 7 C's!



Check

Clean

Cover

Cross
Contamination

Cook

Cool / Chill

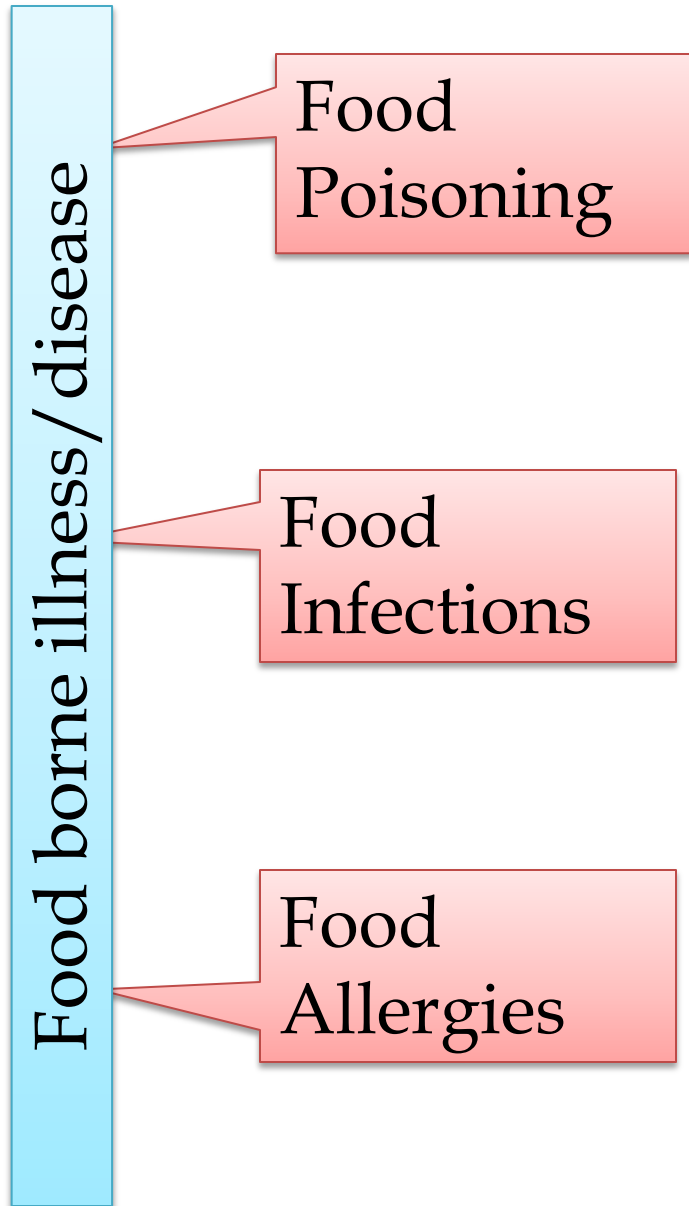
Consume

By consuming
spoiled or
contaminated
food.....

Leads to

Food borne illness/
disease

Now let us learn about food borne illness/diseases.....



How to Control of Food Borne Diseases



- Prevent cross contamination
- Ill persons or carriers should not handle food
- Thorough cooking of potentially hazardous foods like mincemeat and cutlets
- Washing of salad vegetables, fruit thoroughly
- High standards of personal hygiene, hand washing
- Strict segregation of raw/ high risk foods
- Proper temperature control
- Avoid untreated milk and milk products
- Improve hygiene of harvesters, slaughter house, retailers
- Training of food handlers including farm workers
- Increase consumer awareness

What is
Food
Poisoning?
??

It is an illness caused by toxins present in contaminated food!

Toxin is Produced during growth of Bacteria in contaminated food.

On consumption, the toxin irritates the lining of the GI tract causing symptoms such as vomiting, abdominal pain and diarrhoea.

Names of some food poisoning bacteria

Clostridium perfringens

Bacillus cereus

Staphylococcus aureus

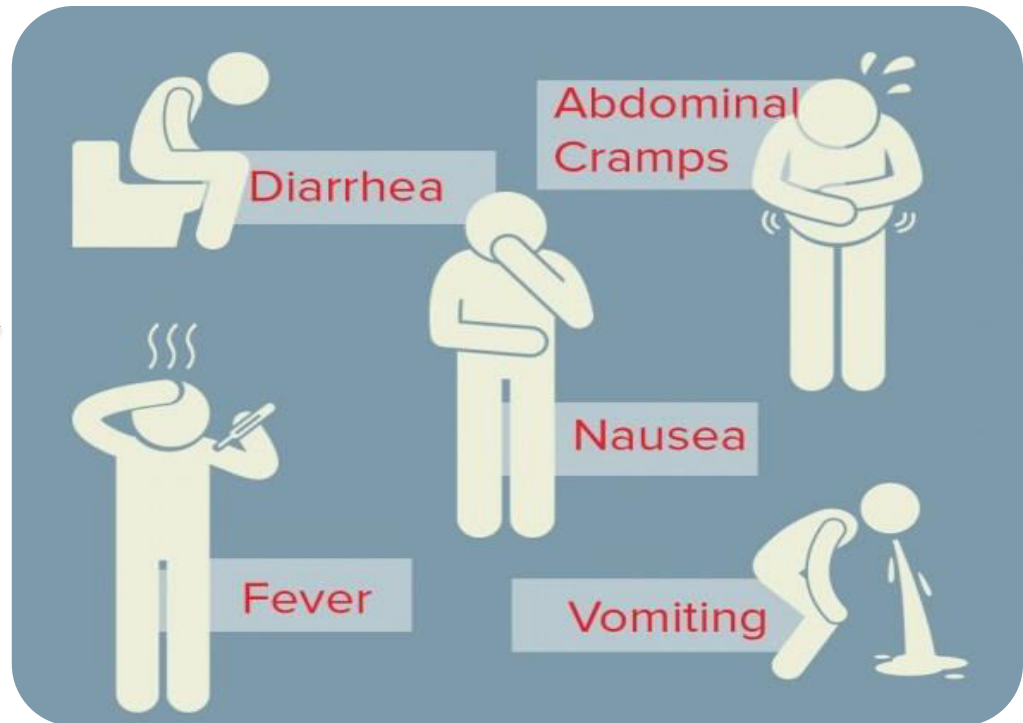
Clostridium botulinum

What is Food Infection?

A food infection is an illness caused by microbes. It happens when we consume food which contains living bacteria.

The bacteria multiply in our body and cause infection. Symptoms occur when body reacts to presence of large number of bacteria or their metabolites.

Symptoms of Food Infection



What is Food Allergy??

An allergy is a special reaction some people show to some foods

These reactions could be serious. These foods are otherwise harmless to most people

Common Food Allergies



Symptoms of Allergies

General flushing of the skin

Swelling of throat and mouth

Severe breathlessness

Sudden feeling of weakness

Fall in blood pressure

Urticaria or rashes on the body

Difficulty in swallowing and speaking

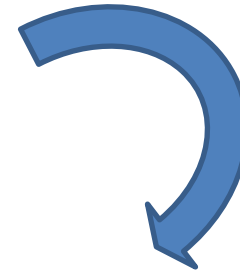
Abdominal pain, nausea and vomiting

Sudden feeling of weakness

Loss of consciousness in some cases

Now, as we have gained enough knowledge on the role of Microorganisms, Personal hygiene and Hygienic Handling of Food in Food Safety...

Lets have a quick view on



Role of Hygiene of our surrounding in ensuring safe food....

- Location and equipments
- Pests

Hygiene of our Surrounding

Harmful organisms can invade the food service establishment through

...

Food

People

Unsanitary facilities

Unsanitary equipment

Disease spreading pests

Are street foods safe ?

- Street foods as you know are foods and beverages prepared and sold by vendors in streets and other public places for immediate consumption without further processing. They are easily available and affordable food options.
- Did you also know that the nutritive value and hygiene of these foods is usually neglected or compromised?

How food can become unsafe?

- **Poor cleaning and sanitizing:**
- Equipment and utensils are not washed, rinsed, and sanitized between uses
- Food contact surfaces are wiped clean instead of being washed rinsed and sanitized
- Wiping cloths are not stored in a sanitizer solution between uses
- Sanitizer solution was not prepared correctly

Source -----

Common Pests in Kitchens

- Houseflies
- Cockroaches
- Rats & mice
- Pigeons
- Spiders
- Wasps
- Weevils



Do not let the fly have its meal before you

Flies cannot chew so they vomit on food to liquefy it.

They suck up the liquid vomit containing harmful microbes.

While feeding, they drop excreta with pathogens.

Fly specks include light drops of vomit and dark particles of excreta.

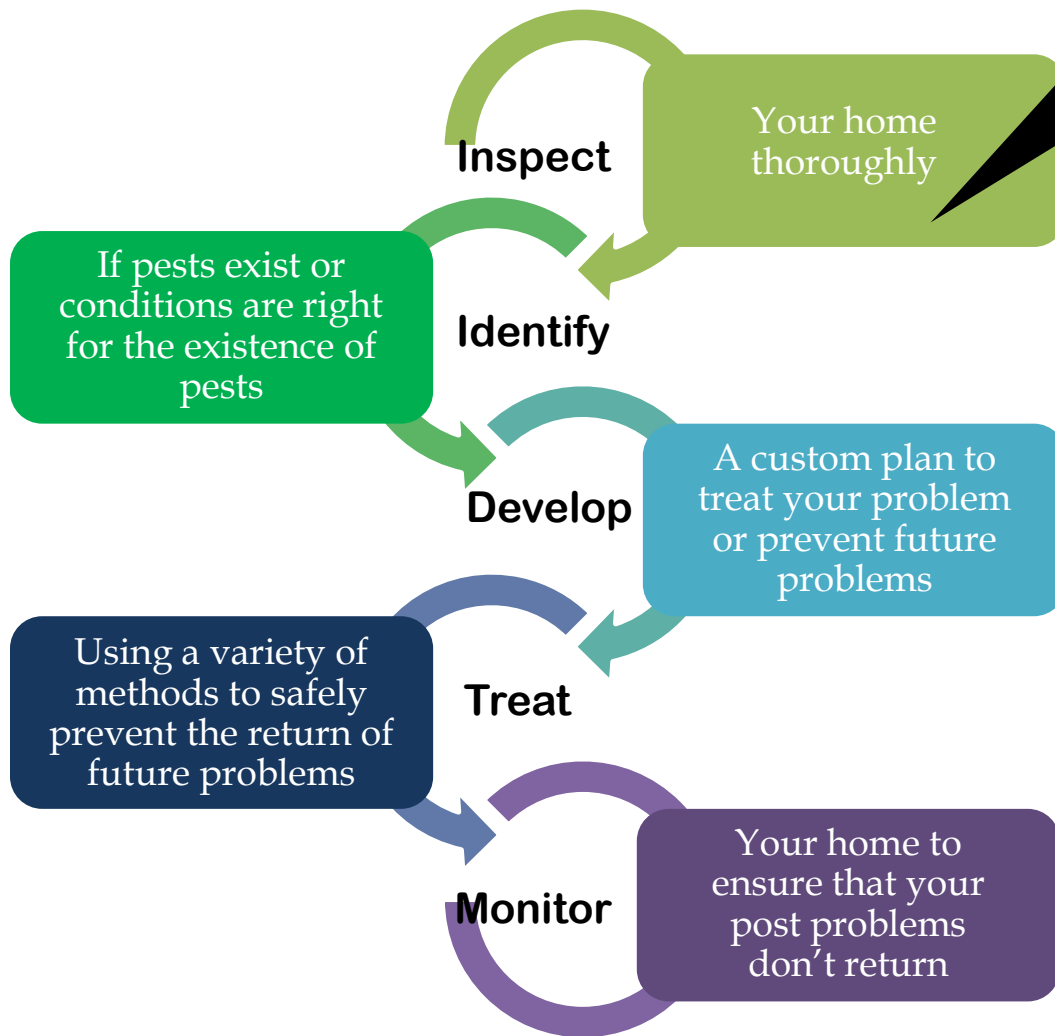
Sticky hair on limbs help carry bacteria everywhere.

Source -----

How do Pests Transmit Disease?

- Pests like houseflies and cockroaches breed in dirty places like garbage dumps and drains.
- They contaminate unprotected foods, utensils and other surfaces.
- Enroute, they collect many disease causing microbes on their bodies and in their stomachs.
- They spread diseases like diarrhoea, dysentery, typhoid fever, intestinal worms and food poisoning.

How to control pests?



- Pests pose a major threat to the safety and suitability of food.
- Pest infestations can occur where there are breeding sites and a supply of food.
- Good hygiene practices should be employed to avoid creating an environment conducive to pests.
- Good sanitation, inspection of incoming materials and good monitoring can minimize the likelihood of infestation and thereby limit the need for pesticides.



Lets now have a look what is nutritious food ??? For this, you need to know about WHAT is ???

- Nutrition
- Nutrients and their types
- Recommended Dietary Allowance (RDA)
- Energy

In the previous slides, we have learnt all about food safety which includes:

- Microorganisms
- Personal hygiene
- Hygienic Handling of Food
- Hygiene of our surrounding
- Factors responsible for spread of disease

What is Nutrition, Nutrients, types of nutrients.....

As we have learnt earlier:

- Nutrition is the science of food and its relation to health
- The way our body makes use of these nutrients is directly proportional to our health and well being

Nutrients are the chemical substances obtained from the food we eat and are used by our body for growth, maintenance or repair and for protection from infections

Nutrients are divided into two major groups:

Macronutrients

- Carbohydrates
- fats
- proteins

Micronutrients

- vitamins
- minerals

For better understanding these nutrients may be divided into 3 types of food groups:

1. **Go Foods** - carbohydrates and fats
2. **Grow Foods** - proteins
3. **Glow Foods** - vitamins and minerals

THE GO FOODS: 1. Carbohydrates



Carbohydrates are the body's main source of energy.

Food Sources:

- ✓ Whole grain chapatis, bhakris, rice
- ✓ Breads, pasta and all cereal products
- ✓ Roots, tubers and other vegetables, and legumes

Function in the Body:

- ✓ An excellent source of fuel (energy) for the body.
- ✓ Rich in vitamins, minerals and fibre.

Types of Carbohydrates

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graph TD; A[Types of Carbohydrates] --> B[Sugars or Simple Carbohydrates]; A --> C[Starches or Complex Carbohydrates]; B --> D["Fruits & vegetables, milk & dairy products, honey, jam, jaggery, sweets and Chocolates"]; C --> E["Whole grain chapatis, unpolished rice, bread, pasta and all cereal products roots, tubers and other vegetables and legumes"];
```

**Sugars or
Simple
Carbohydrates**

Fruits & vegetables, milk & dairy products, honey, jam, jaggery, sweets and Chocolates

**Starches or
Complex
Carbohydrates**

Whole grain chapatis, unpolished rice, bread, pasta and all cereal products roots, tubers and other vegetables and legumes

THE GO FOODS: 2. Fats

Fats are the richest source of energy.
But too much of these foods will make you fat!

Food Sources:

- ✓ Butter, ghee, vegetable oils, salad dressings, nuts
- ✓ Oil seeds, dairy products made with whole milk or cream
- ✓ Meats



Food Containing Unsaturated Fats

Fat

The richest source of energy.
It gives 9 kcal/g

Food Sources : Butter, ghee, vegetable oil, salad dressings, nuts & oil seeds, dairy products made with whole milk or cream and meats

THE GLOW FOODS: 2. PROTEINS

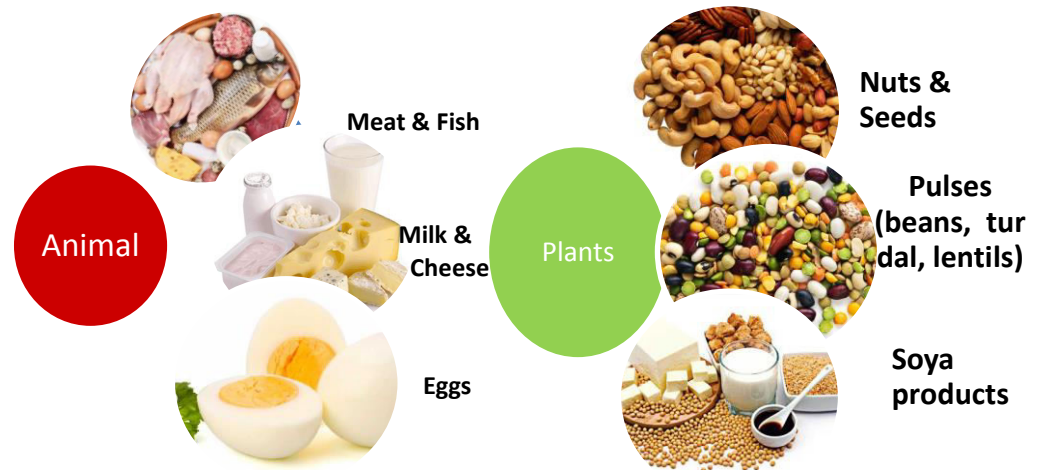
- Protein is essential for growth and repair and keeping cells healthy.

- 1 gram of protein provides 4 kcal.

Food Sources

Milk and dairy products, meat, fish, eggs, poultry, pulses and legumes, nuts and seeds. (Breads, cereals and vegetables also contain small amounts of incomplete protein)

Sources of protein



Types of Proteins

Complete Proteins:

- Contain all 9 essential amino acids.
- They are found in animal food sources.
- Milk, Egg, Poultry, fish etc are of high quality as they provide all the essential amino acids in right proportions.

Incomplete Proteins:

- Lack one or more of the essential amino acids.
- They are found in plant food sources.
- Cereals lack some amino acids while pulses are lacking in others.
- The best way to provide the body complete proteins in a vegetarian diet is to eat cereals and pulses together so that they supplement each other.

THE GLOW FOODS



VITAMINS

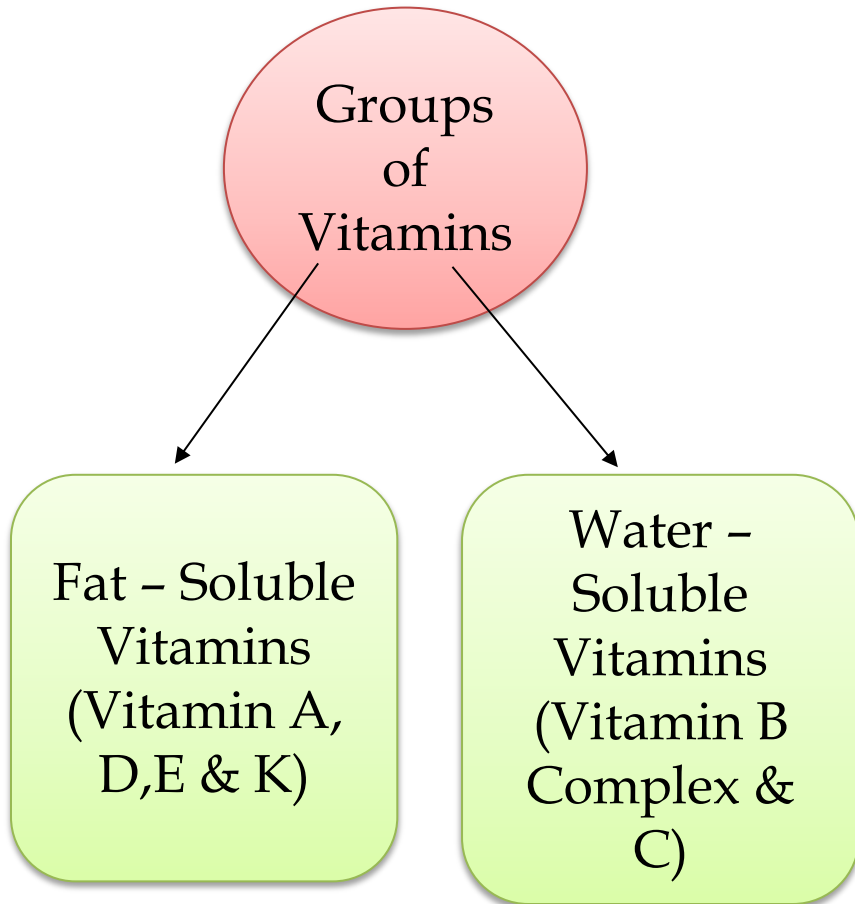
Vitamins are needed by our body in small amounts. Remember your VITAMINS as A, B, C, D, E, K .

They keep our eyes, skin, hair and teeth healthy and shining bright.

MINERALS

Our body needs minerals in small amounts for different functions.

Vitamins



Fat - Soluble Vitamins

- Sources of Vitamin A:
 - Vitamin A is pre formed in liver and whole milk
 - Can also be produced from beta - carotene provided by dark green leafy vegetables
 - Carrots and orange colored fruits such as papaya

Water - Soluble Vitamins

- Sources of Vitamin C:
 - Citrus fruits and berries.
 - Citrus fruits like sweet lime, orange, grapefruit, tangerine, lemon, kinu, carambola.
 - Types of berries : Amla, ber, Karonda, mulberries, blackcurrants, Strawberries, jamun, raspberries , blueberries, cranberries

Minerals

Minerals are inorganic substances required by the body in small amounts for a variety of different functions

Functions

- Minerals are inorganic elements found in body fluids and tissues that assist with life-sustaining processes in the human body.
- Your body needs **macro-minerals** in relatively large amounts such as calcium & phosphorus.
- **Micro minerals** are required in small amounts such as iron, iodine, sodium & potassium.
- While **trace minerals** are required in traces such as copper, zinc, chromium, selenium etc.
- They are required for maintenance and health of skin, hair, nails, blood and soft tissues.

They also govern nerve cell transmission, acid/base and fluid balance, enzyme and hormone activity as well as in blood clotting processes.

- The body requires 16 minerals daily.



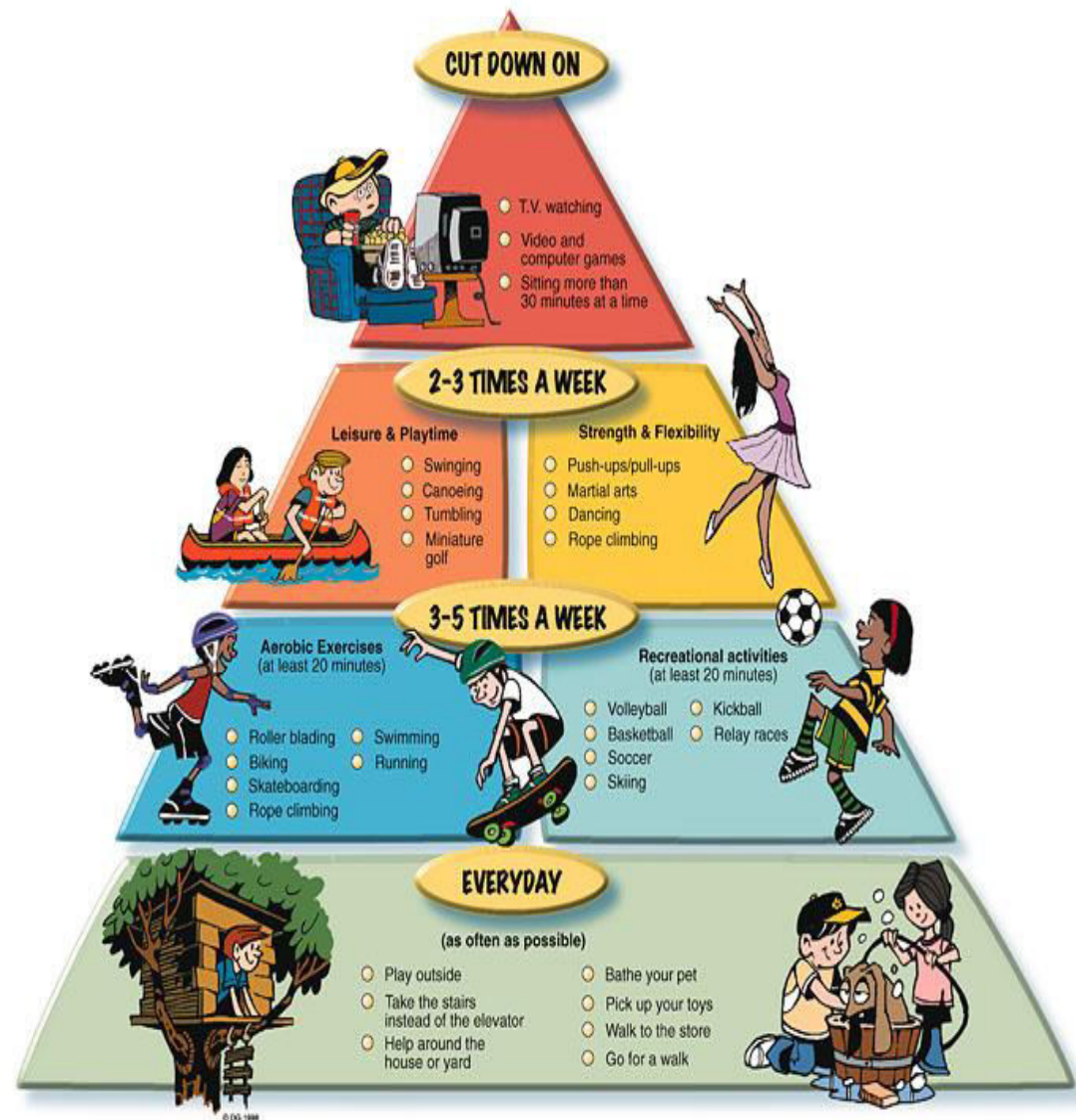
Calcium & Phosphorus	Food Source	Functions in the Body
The body contains more calcium than any other mineral. It is essential for a number of important functions such as the maintenance of bones and teeth, blood clotting and normal muscle function	Dairy Products: milk, cheese, ice cream, green leafy vegetables, ragi, small fish eaten with bones	Helps build and maintain healthy bones and teeth Helps heart, nerves, and muscles work properly

What is Recommended Dietary Allowance(RDA)?

The RDA for all nutrients have been calculated for all age groups based on activity levels to ensure good health. RDA is defined as the amount of nutrient sufficient for the maintenance of health in nearly all people based on the group to which they belong.

RDA=minimum requirement + safety margin (individual variation). RDA does not apply to sick people.

RDA Energy Requirements for



What is Energy?

Energy is the capacity to do work, such as moving around or doing a task.

What is Calorie?

Calorie is the unit used to measure energy.

- kilocalorie is a unit of energy
- It is commonly used to express energy value of food.
- It is more conveniently expressed as *kilocalories(kcals)*.

1000 calories = 1 kilocalorie

What is Energy Balance?

- Energy in = calories consumed per day.
 - Energy out = basal metabolic rate (BMR) + thermic effect of foods, + physical activity per day.
 - Small increments in calories consumed per day or week can contribute to weight gain over time.
- Energy balance: energy in = energy out
- When energy in = energy out, we are in Energy Balance and we neither lose nor gain weight

Food - An Energy Powerhouse!

When we consume food and drink, energy provided by carbohydrate, protein, and fat is metabolised and used by our bodies.

Carbohydrate, protein, and fat are broken down into smaller compounds which are then oxidised in the cells of the body (respiration).

End products of respiration – carbon- di-oxide + water + energy

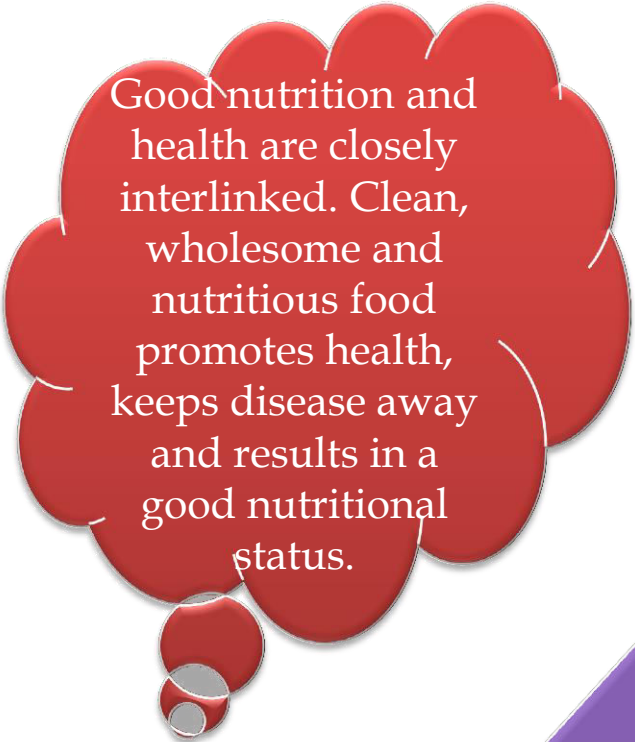
Energy providing nutrients

Energy in the diet is provided by the nutrients
carbohydrate, protein, and fat.

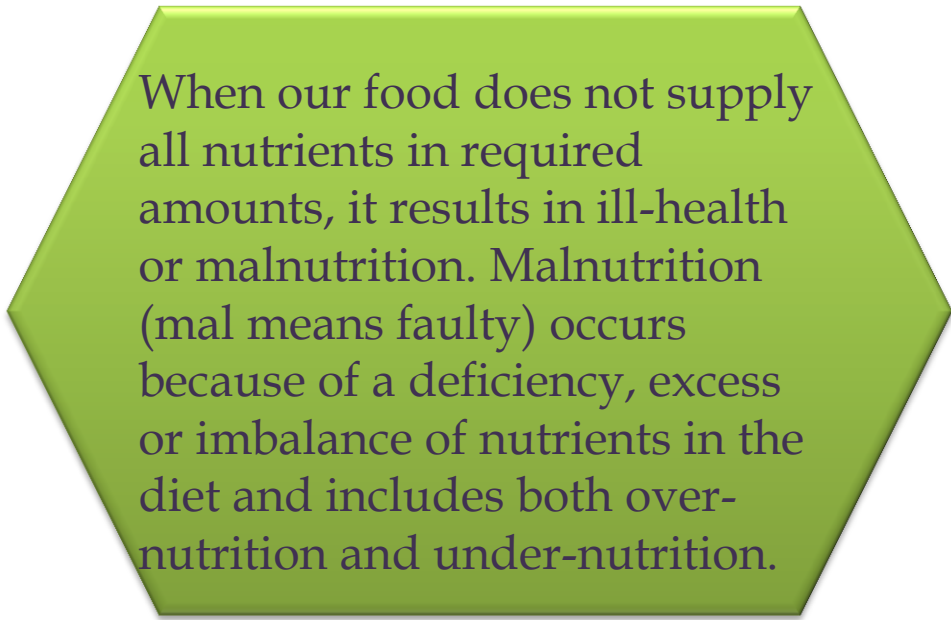
1 gram of carbohydrate provides 4 kcal.

1 gram of protein provides 4 kcal.

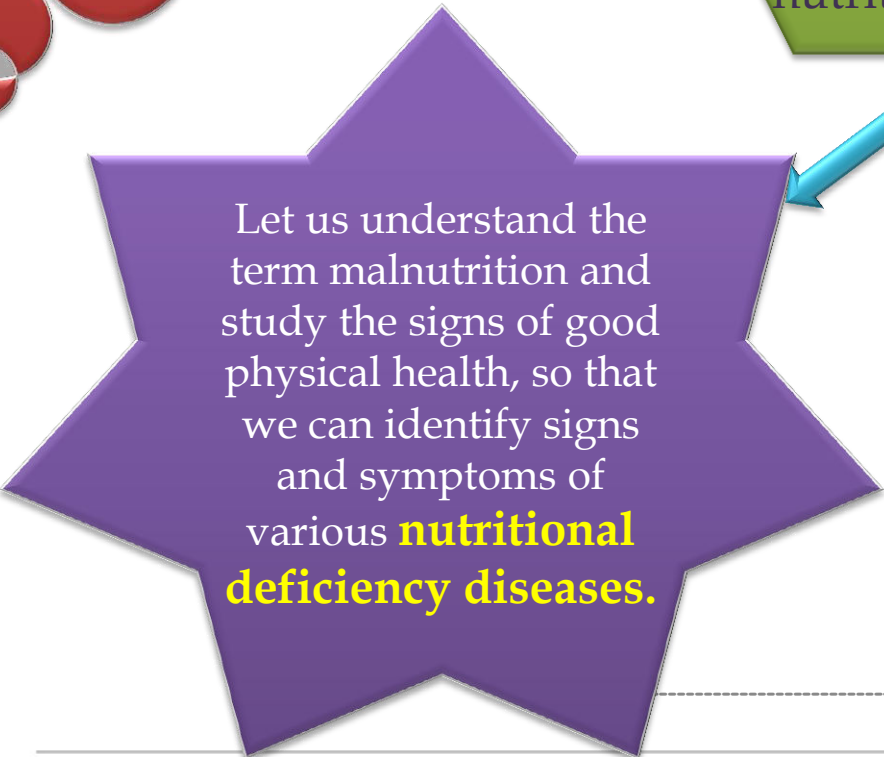
1 gram of fat provides 9 kcal.



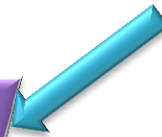
Good nutrition and health are closely interlinked. Clean, wholesome and nutritious food promotes health, keeps disease away and results in a good nutritional status.



When our food does not supply all nutrients in required amounts, it results in ill-health or malnutrition. Malnutrition (mal means faulty) occurs because of a deficiency, excess or imbalance of nutrients in the diet and includes both over-nutrition and under-nutrition.



Let us understand the term malnutrition and study the signs of good physical health, so that we can identify signs and symptoms of various **nutritional deficiency diseases.**



What are nutritional deficiencies?

- Protein is essential for growth and repair and keeping cells healthy.
- Protein also provides energy:
- 1 gram of protein provides 4 kcal

Deficiency Symptoms:

Loss of weight, fatigue, anaemia, lowered resistance to infection, poor healing of wounds and oedema.

Kwashiorkor results from a severe protein deficiency.

Symptoms of Kwashiorkor:

- Puffy or moon-shaped face
- Puffiness or oedema on hands and feet
- poorly developed muscles
- Leading to pot belly
- weak hair and nails, easy pluck ability of hair
- Growth is retarded

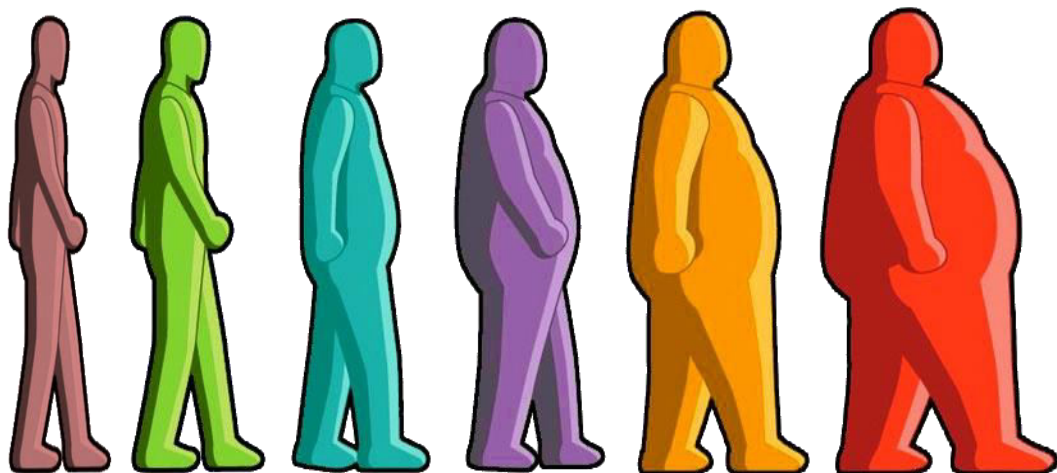
Are you a victim of Protein deficiency?

- Do your nails break easily?
 - Does your hair fall when you comb or wash it?
 - Do you fall ill often?
-

Nutrients and Deficiency Symptoms



- **Malnutrition** (mal means faulty) is an impairment of health resulting from a deficiency, excess or imbalance of nutrients.
- A deficiency of calories and/or one or more nutrients in the diet is called **Under-nutrition**. Undernourished children are underweight and prone to infection.
- **Over-nutrition** refers to an excess of calories and/or one or more nutrients in the diet.
- An excessive intake of calories results in overweight which can lead to **Obesity**.



Both under-nutrition and over-nutrition are called Malnutrition and are harmful to the body

under weight	Normal	Overweight	Obese	Severely Obese	Morbidly Obese
18.5 kgs or less	18.5 to 24.9 kgs	25.0 to 29.9 kgs	30.0 to 34.9 kgs	35.0 to 39.9 kgs	40 kgs or more

Here are simple steps to overcome deficiencies

Balanced diet

- Eating a balanced diet with variety of fresh wholesome food
- Following proper cooking and storage practices
- Using simple measures to enhance the nutrient content of food like sprouting of grains and fermentation of cereal/pulse batters



Improving protein quality

Include a small quantity of complete protein food in every meal

- Complete proteins such as milk, curd, paneer, buttermilk and eggs could be used in small quantities in various preparations like raita, curd rice, kadhi, french toast etc.
- This improves the protein quality of the meal while at the same time does not increase the cost significantly.

Cereal and pulse combinations

- When cereals and pulses are eaten together they complement each other as essential amino acid deficient in cereals is present in pulses and vice versa.
- This is possible because the same amino acids are not missing from all plant foods.
- Missi roti, Rajmah chawal, Chhole bhature, Dal rice, puran poli, chivda and idli are some popular examples of cereal pulse combinations.
- Correct mixtures of several plant foods can give high quality proteins

Simple ways to increase the nutrient content of your diet

- Cereal + Pulse combinations,
- Include small serving of milk/curds in the meal
- Add processed Soya products like Textured Vegetable protein (TVP) -nuggets etc.
- Use processed foods which have been fortified with essential amino acids such as Lysine enriched bread and biscuits

Carbohydrates

- Whole grain cereals,
- Roots and tubers
- Fruit and jaggery
- Eat at least 3 meals/day

Fats

- Consume a variety of good fats and different oils like Clarified butter, groundnut oil, sesame oil, mustard oil etc.
- Avoid trans fats like margarine and vanaspati which are used in fried snacks and bakery products

How to improve quality of Carbohydrates and Fats

Water

- Drink 8 glasses of water/day
- Drink lime juice, cocum sherbet, pannah, tender coconut water, fruit juices, lassi, etc. which are refreshing and nourishing
- Avoid carbonated sweetened beverages as they are hollow calorie foods



Fad Diets

- Fad diets to lose weight or detox the body are gaining popularity
- They are extreme diets and can have adverse effects in the long run.
- Can be an additional burden for vital internal organs
- Most weight loss is fluid loss and not fat loss
- ALWAYS REMEMBER THAT A FAD DIET CANNOT REPLACE A WELL BALANCED DIET AND EXERCISE

Now that we know
about Nutritional
deficiencies and ways
to control them,
learn about role of
diet in maintaining
good health...



Ways:

- Balanced Diet
- Healthy plate
- Healthy Menu

What is HFSS Food?

HFSS (High Fat Sugar Salt) is defined as “any food, which is low in essential nutrients and high in particular calories and sodium. Such foods contain little or no proteins, vitamins or minerals but are rich in salt, sugar, fats and are high in energy (calories). For e.g. highly salted chips, high in refined carbohydrates (empty calories) sugars -like candy, soft drinks and high in saturated fats like cake and chocolates.”

(CSE,2012)

“**Unhealthy diet** is one key cause of the growing global burden of disease.” WHO.

Changing Diet- low on nutrients and high on salt, sugar and fat, are directly indicated to disease.

HFSS foods are responsible for rising cases of obesity and non communicable diseases(NCDs) like cardiovascular diseases and diabetes.

Changing Diet & NCDs

Studies have shown that despite being unhealthy, HFSS food induces gorging that leads to obesity.

The fat from fatty acids affects the brain.

When we eat something high in fat, the brain gets hit' with the fatty acids, and the fat molecules cause the brain to send messages to the body's cells, warning them to ignore the appetite-suppressing signals from leptin and insulin, hormones that are involved in weight regulation. Since the body does not get the signal that it is satiated it leads to over eating.

Why is HFSS food bad?

Health Implications of Consumption of HFSS

Healthy Foods

Help in maintaining good health and support:

- Growth and body building
- Increasing immunity
- Energy production

Example

- **Protein rich foods e.g.**, flavoured milk, omlette, fish fillet, Besan chilla
- help in body building and growth
- **Fruits and fruit juices** are rich in vitamins and minerals which provide protection against infections
- **Carbohydrate rich foods** such as khati roll, vegetable stuffed paratha, biscuits etc help in providing energy.

Benefits of a Healthy Diet

- Promotes healthy growth and development
- Improves learning potential and school performance
- Improves well-being
- Reduces risk of developing NCDs
- Keeps gums and teeth healthy
- Helps in social development by sharing knowledge of a healthy diet

Balanced Diet

Planning Wholesome Meals

Balanced diet is one which contains different types of foods (from all food groups) in such quantities and proportions that the need for all the nutrients such as carbohydrates, proteins, fats, vitamins, minerals, water and fibre are adequately met.

- It not only meets our day-to-day nutrient requirements but also provides for an extra allowance of the nutrients to be stored in our body, which can be used in conditions of stress.

What is the need for a balanced diet?

- It promotes and preserves good physical and mental health.
- It meets the RDA for all nutrients.
- It maintains acceptable body weight for height.
- It provides a safety margin for nutrients.
- It includes all nutrients in correct proportions.
- It includes a variety of food items.
- Non nutrients such as dietary fibre and antioxidants confer positive health benefits.

Dietary Goals for a balanced diet

- Prefer, **fresh locally available vegetables and fruits** in plenty to fulfill the need for protective substances such as vitamins and minerals.
- Include **eggs, flesh foods and fish** to enhance the quality of diet.
- However, vegetarians can derive almost all the nutrients from diets consisting of cereals, pulses, vegetables, fruits and milk -based diet.
- **Oils, fats, sugars and nuts are calorie rich foods-** limit their intake
- **Choose a variety of foods** in amounts appropriate to age, gender, physiological status and physical activity.
- A diet consisting of foods from several **food groups** provides all the required nutrients in proper amounts.
- **Cereal, millets and pulses** are major sources of most nutrients.
- **Milk** which provides good quality proteins and calcium must be an essential item of the diet, particularly for infants, children and women.

The Healthy Eating Plate

We need to eat a balance and variety of foods from these groups:

Fruit and vegetables



Cereals, millets, potatoes, pasta



Milk and dairy foods



Meat, fish, eggs, pulses & legumes



Fats



Menu Planning Advice	Each lunch should include a main course and a dessert
<p>Meat, fish, eggs, beans and non-dairy sources of protein</p>	<ul style="list-style-type: none"> • Provide a portion of meat, fish, meat alternative, eggs or pulses as part of lunch each day. • Provide a variety of foods from this group as part of lunch across the week. • It is good practice to provide a portion each of red meat, poultry, fish and meat alternatives or pulses each week as part of lunch. • It is good practice to provide vegetarian or vegan children with a variety of meat alternatives, pulses and nuts each week as part of lunch. • Provide one lunch for all children each week which uses a meat alternative or pulses as the protein source. • Provide a portion of oily fish at least once every three weeks, this can be provided as part of lunch. • Limit the provision of processed meat products, fish products and products made from meat alternatives to once a week for each of the three types.
<p>Milk and dairy foods</p>	<ul style="list-style-type: none"> • Children should have three portions of milk and dairy food each day (including those provided at home- Kheer from vermicelli or rice); one portion of milk or a dairy food and/or a milk based pudding can be provided as part of lunch.
<p>Drinks</p>	<ul style="list-style-type: none"> • Children must have access to fresh drinking water. • If fruit juices is provided as part of lunch, this should be unsweetened and diluted (half juice and half water) • Children must drink lassi, matha


Composite foods

- Many recipes and dishes we eat are made up of foods from more than one group of the healthy eating plate.
- These are called composite foods.
- **Can you think of some examples?**
- Idli/ dosa & sambhar
- Stuffed veg Parantha/ Khathi rolls
- Sindhi Khadi





IMPORTANCE OF FOOD LABELS



Knowing about Food labels is necessary because it tells us what we are purchasing in terms of nutritive value. Also, labels help consumer identify whether the products contains some allergens. It helps us to make a conscious selection.

Information displayed on label

1. Name of the food product
2. List of ingredients in descending order of weight
3. Symbol for vegetarian/non-vegetarian food
4. Nutritional facts
5. Food additives and their class/numerical identification number of colours
6. Name and address of manufacturer and manufacturing unit
7. Net weight of contents and drained weight
8. Lot/Code/Batch identification no.
9. Date of manufacture dd/mm/year
10. Best before date
11. If irradiated mention particulars
12. Country of origin for imported food
13. Instructions for use & disposal of packaging
14. Licensing authority and license number
15. The label may have pictures and graphics on it

The label should:

- Be clearly visible
- Be legible
- Properly adhere to the container

Labels warn about sugar, salt & fats levels also!

Labels should mention additives & allergens which may have accidentally entered food!

Nutrition Facts

Serving Size 1 cup (228g)

Servings per Container 2

Amount Per Serving

Calories 280

Calories from Fat 120

% Daily Value*

Total Fat 13g 20%

Saturated Fat 5g 25%

Trans Fat 2g

Cholesterol 2mg 10%

Sodium 660mg 28%

Total Carbohydrate 31g 10%

Dietary Fiber 3g 0%

Sugars 5g

Protein 5g

Vitamin A 4% • Vitamin C 2%

Calcium 15% • Iron 4%

*Percent Daily Values are based on a 2,000-calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Fiber		25g	30g

Calories per gram:

Fat 9 • Carbohydrate 4 • Protein 4

Canteen inspection checklist

• Use checklist provided on the SNF@school portal (<http://snfportal.in/snf/jsp/school.jsp>) to inspect food preparation areas, associated storage areas and seating areas.

Steps to be followed:

- Ensure that all Food Business Operators/Caterers are registered or licensed under the provisions of the Food Safety and Standards Act, 2006, Rules and Regulations made thereunder by :
 - Asking them their FSSAI Registration/License No.
 - This FSSAI License/Registration number should be prominently displayed by the Food Business Operator at the school canteen/mess premises.
 - In the absence of the same, Inform them to apply online immediately at <https://foodlicensing.fssai.gov.in/index.aspx>.
- Constitute a 'School Health and Wellness Team' i.e. a team of 4-5 students together. These students may be called as '*Food Detectives*'. The team should be led by a senior teacher as "Health and Wellness Coordinator".
- Use this checklist to inspect food preparation areas, associated storage areas and seating areas.
- Inspections should be carried out at least once per month. Inspections should be done when the canteen is occupied by staff and students, to get a true picture of conditions and practices.
- Carry out inspections in manageable chunks. Divide your area into separate sections. Use one checklist per section and record details of faults or weaknesses.
- When you have carried out an inspection and recorded any faults or weaknesses found, report to your Head of School or Office, together with your comments and recommendations for action.
- Keep a copy of each completed inspection checklist and record action taken to correct the faults you have reported.

