PRE-SCHOOL TEACHER TRAINING

Paper - III

HEALTH & NUTRITION

INDEX

UNIT-1

CHILD HEALTH AND IMMUNISATION

STRUCTURE

1. MEANING, SIGNIFICANCE AND FACTORS INFLUENCING HEALTH

2. IMPORTANCE OF PERSONAL AND ENVIRONMENTAL CLEANLINESS

3. NEED AND IMPORTANCE OF IMMUNISATION, IMMUNISATION SCHEDULE-CARE BEFORE /AFTER VACCINATION.

Learning objectives:

By the end of the unit ,

- ***Student will be able to understand the meaning, significance and factors influencing Health***
- ***Know the importance of Personal and Environmental cleanliness***
- ***Know the Immunization schedule for children***
- ***Know the care before/after vaccination***

Introduction

Children represent the future and ensuring their healthy growth and development ought to be prime concern of all societies.

Newborns are particularly vulnerable to malnutrition and infectious diseases many of which can be effectively prevented or treated.

Good child health is important not only for children and families but also for good health in adulthood. Health and education are important factors for the development of child.

Children health encompasses the physical, mental, emotional and social well being of children from infancy through adolescence.

Meaning of Health

Health is critical input for the overall development of the child and influences significantly the enrolment, retention and completion of school.

The word health was derived from the old English

word "hoelth" which meant a state of being sound and generally refers to soundness of the body.

Health is a complex entity which tells us about efficiency

of a living being . The World Health Organisation (WHO)

defined Health as "a state of complete physical, mental and

Social well being and not merely the absence of disease or

infirmity" .

Health can also be defined as the state of absence of disease, normal function of a person as per his age and sex under the prevailing social and geographical conditions and his ability to work automatically on the basis of coordination and balance among different organs of his body.

Significance of Health for individual

Child's health is important for proper growth and development of their mind and body. They require energy to spend entire day in school, pay attention in classrooms and participate in various activities. They need proper nutrition, balanced diet and regular health checkup which will prevent health problems in future.

Significance of Health for family

The family as a social institution has an impact on child's health. From birth child grows in a family setting which protects, promotes health and prevents disease in children.

Family helps the child to develop stability and emotional maturity to be socialised and an accepted member of the society.

FACTORS INFLUENCING HEALTH:

Health is a multi dimensional phenomena which is influenced by various factors along with physical, mental, social and spiritual factors. Health is determined by many factors like behavioural pattern, political system, biological situations, socio economic conditions and environment. It means health is determined within the individual itself as well as society or environment in which he or she lives.

1. Behavioural determinants:

Health is the mirror of one's lifestyle because faulty and ill habits have adverse effect on the health of the child like lack of exercise, lack of sleep, eating too much or inadequate nutrition effects health.

2. Political system:

Political influences have the power and authority to regulate our surroundings in which health care is included. Implementation of any health program cannot be conducted properly without political will.

3.Biological determinants:

Heredity and genetic determinants have remarkable influence on the physical and mental health of the child.

4. Socio economic determinants:

Education, economy, occupational opportunities, housing, nutritional level, health care system, health resources , culture, customs, tradition, beliefs of the family and community will effect health.

5.Environmental determinants:

Environment has a direct impact on the health of individual family or community. Air, water, noise, radiation, housing, waste management all affects the health status and quality of life.

Importance of Personal and Environmental Cleanliness:

"Cleanliness is next to Godliness" – Mahatma Gandhi

Cleaning plays a vital role in our daily lives. Be it personal hygiene or setting a standard for environmental cleanliness. Effective cleaning is our first line of defence against viruses and infectious diseases.

A clean environment promotes a safe work place.

Healthy personal habits instilled in childhood often follow children into adulthood.

Health of man is associated with every element of environment. Since every change in environmental conditions affects the health. Clean and safe environment is the basis of good health.

Hygiene can be defined as "the science of health which includes all the factors contributing to healthy living".

Personal hygiene refers to the comprehensive cleaning and caring of the body. It is important in every stage of life. Good cleanliness habits start in childhood.

Personal hygiene includes bathing, washing hands, brushing teeth and wearing clean clothing. It also includes making safe and healthy decisions when interacting. Hygiene practices has both health and social benefits.

Reasons for personal hygiene

- ***Basic hygiene should be taught to children at an early age to help them to establish good habits.***
- ***Parents can reinforce good hygienic behaviour by creating routines and by being good role models.***
- ***One's personal social and professional world is effected by hygiene habits.***
- ***Personal hygiene helps in disease prevention.***
- ***Nice smile***
- ***Lowers health care costs***
- ***Dandruff prevention***
- ***Self esteem***
- ***Sex appeal***
- ***Social acceptance***
- ***Professional***
- ***Being a role model***
- ***Pain prevention***

Consequences of poor personal hygiene

- ***Body odour***
- ***Bad breath***

- ***Dental diseases***
- ***General diseases***
- ***Gender specific***
- ***Smelling clothes***

Difference between cleanliness and hygiene

Cleaning is removing dirt, waste or unwanted things from the surface of objects using detergents and equipment while hygiene refers to prevention of disease through the use of cleaning as part of several inputs.

Types of personal hygiene

Care of body:

Taking a daily bath or shower using mild soap and warm water helps to wash away dirty and bacteria that may lead to body odour. Numerous diseases can be avoided or managed by simply keeping the body clean.

Care of hair

Washing hair with clean and luke warm water. Use separate comb and brush. Oil massage prevents dandruff.

Care of hands and feet

Hands and nails may get infected if not washed properly after coming in contact with edibles, equipment, clothes and after urination or defecation. If anything is eaten with infected hands infections are transmitted hence it is essential to keep hands clean.

- ***Nails should be cut short.***
- ***Apply soap or solution on every fingers and palm and should be rubbed***
- ***Clean towel should be used***
- ***Care of feet : Feet should be washed with clean water and kept free from dust, dirt and filth.***

Oral hygiene

Good oral hygiene includes brushing teeth twice a day. Brush should not be very hard or very soft. Sweets should not be consumed before going to bed.

Sleep

Early to bed early to rise make man healthy and wealthy. Good sleep helps in growth and development

Environmental cleanliness

Cleanliness is essential to lead a healthy life. It is a state of mind and heart that involves our morals and worship.

Keep your surroundings pure & clean. This hygiene will keep you healthy, physically and mentally.

Many adults do not set very good examples of cleanliness.

Habits like smoking, chewing tobacco and betel leaves and spitting on roads are very common in our society. Open defecation are left messy and stinking leading to many diseases

Litter on roads, polluted water bodies and poor sanitation make the public places as breeding grounds for pests. Rats, cockroaches, mice, flies and mosquitoes serve as hosts for spreading diseases. Lack of hygiene is an open invitation to infectious disease.

A healthy environment is necessary to live healthy. If the environment is dirty it effects the health of the people living around. We can lead a healthy life by means of having clean and healthy environment. Cleanliness in local environment is one of the most important means to prevent diseases. Cleanliness of house is necessary so also cleanliness in surroundings.

Awareness of the cleanliness in local environment and public places, no open defecation having proper toilet's not throwing garbage in open, compost pit for disposing garbage in rural areas, waste water to be used in house garden and disposing in soak pit are ways to keep environment clean.

NEED AND IMPORTANCE OF IMMUNISATION

Newborn babies are immune to many diseases because they have antibodies they got from their mothers. However the immunity goes away during the first year of life. Before vaccines many children died from diseases:

A vaccine is a medicine. It helps to protect the person from a disease.

Vaccination means actually getting the vaccine either through mouth or injection.

Immunisation means both getting the vaccine and being protected from the disease. Vaccine stimulate the body's own immune system to protect the person against subsequent infection or disease.

It is always better to prevent a disease than to beat it after it occurs. Diseases that used to be common in our country and around the world including Polio, Measles, Diphtheria, Pertussis (Whooping cough),Rubella (German measles),Mumps,Tetanus, Rotavirus and Haemophilus influenzae type (Hib) can now be prevented by vaccination . Through vaccination children can develop immunity without suffering from the actual disease that vaccines prevent.

Importance of Immunisation:

Immunisation is a very safe prevention.

- ***It protects the child from serious illness, some of which can be life threatening.***
- ***Immunisation helps to reduce the spread of disease to others and prevent epidermis.***
- ***Effective way of protecting the self and family members of community and thus future generation***
- ***If a vaccinated person comes in contact with disease, their immune system is able to respond more effectively. This either prevents the disease from developing or reduces the severity.***
- ***Vaccination records might be needed to enrol the child care in school.***
- ***With the use of immunisation in babies the mortally rate is dropped significantly.***
- ***Saves family time and money.***

IMMUNIZATION SCHEDULE:

Immunisation is the modern scientific weapon for the control of many infectious diseases. Immunisation against preventable diseases is central to the concept of public health care. It is essential for child survival and child development.

Use of Immunisation has dramatically decreased the incidence of infectious diseases. It is recommended that Immunisation begin shortly after birth and be completed in early Child hood except for boosters. Immunisation may be given by injection, inhalation, oral solutions, or nasal sprays. They are frequently given in combination to minimise multiple injections.

The major vaccine preventable diseases are Poliomyelitis, Pertussis, Tetanus, Measles, Diphtheria, Tuberculosis nearly 20-30% of child deaths are due to these six diseases. Among these six, measles is the number one killer.

Refer table-1 For Immunisation Schedule

IMMUNISATI ON SCHEDULE IN INDIA 2018

S.No	Vaccine	Prevents	Min Age for Dose 1	Interval Between Dose 1 and Dose 2	Interval Between Dose 2 and Dose 3	Interval Between Dose 3 and Dose 4	Interval Between Dose 4 and Dose 5
1	BCG	TB & bladder cancer	Birth				
2	HepB	Hepatitis B	Birth	4 weeks	8 weeks		
3	Poliovirus	Polio	Birth	4 weeks	4 weeks		
4	DTP	Diphtheria, Tetanus & Pertussis	6 weeks	4 weeks	4 weeks	6 months (Booster 1)	3 years (Booster 2)
5	Hib	Infections caused by Bacteria	6 weeks	4 weeks	4 weeks	6 months (Booster 1)	
6	PCV	Pneumonia	6 weeks	4 weeks	4 weeks	6 months (Booster 1)	
7	RV	Severe Diarrheal Disease	6 weeks	4 weeks	4 weeks		

S.No	Vaccine	Prevents	Min Age for Dose 1	Interval Between Dose 1 and Dose 2	Interval Between Dose 2 and Dose 3	Interval Between Dose 3 and Dose 4	Interval Between Dose 4 and Dose 5
8	Typhoid	Typhoid Fever, Diarrhea	9 months	15 months (Booster 1)			
9	MMR	Measles, Mumps & Rubella	9 months	6 months			
10	Varicella	Chicken pox	1 year	3 months			
11	HepA	Liver disease	1 year	6 months			
12	Tdap	Diphtheria, Tetanus & Pertussis	7 years				
13	HPV	Some Cancers & Warts	9 years	For Child aged 9-14 years: 6 months. For Child aged 15 or more: 1 month	For Child aged 15 or more: 5 months		

CARE BEFORE/AFTER VACCINATION:

Making the choice to vaccinate the child is vital for their health and well being

BEFORE VACCINATION

- ***Remain calm and confident.***
- ***Bring your child's favourite stuffed toy or blanket.***
- ***Breastfeed the baby before the shot and continue during and after the shot.***
- ***Avoid pain relievers such as ibuprofen etc***
- ***If the child is older, explain that he or she will get a vaccine in leg or arm with an needle. It will be like a pinch or pressure/pushing for few seconds.***
- ***Don't tell the child it won't hurt.***

DURING THE SHOT: / AT Doctor's office

- ***Hold the baby close. An older child may sit upright and held on lap with a hug.***
- ***Distract the child with a favourite toy, singing, rattles, bubbles.***
- ***Breast feed***
- ***Stay calm***
- ***Acknowledge child's pain don't focus on it***

AFTER THE SHOT:

- ***Stay for 15 minutes and watch for any reaction.***
- ***Child may have fever, pain, redness and/ or swelling at the injection site for 1 or 2 days after vaccination.***
- ***Cold cloth can be placed over the site***
- ***Encourage the child to move the limb***
- ***Cuddle and comfort the child***
- ***A lump may form under the skin and last one or four weeks***
- ***dress the child lightly do not rap the child tightly***
- ***Give the child lot of liquids***
- ***It is normal for some reliever.***

FOR OLDER CHILDREN:

Be honest with the child. Explain that shots can pinch or sting, but that it won't hurt for long.

Engage others family members especially older siblings to support the child.

Avoid telling scary stories or making threats about shots.

SUMMARY

Health is state of complete physical mental and social well being and not merely the absence of disease or infirmily.

Personal hygiene is the act of maintaining cleanliness and grooming of the external body.

Immunisation is the way of protecting the human body against infectious diseases through vaccination.

Vaccines prevent disease in the people who receive them and protect those who come into contact with a vaccinated individuals.

There may be side effects after vaccination. So for each and every parent it is important to know how to take care of the children before and after vaccination.

Short answer type questions:

1) ***Define health?***
2) ***What is personal hygiene?***
3) ***What is immunisation?***
4) ***Write the need and importance of immunisation?***

Long answer type questions:

1)Write the importance of personal and environmental cleanliness?
2)What are the factors influencing health?
3)Give in detail about the immunization schedule?
4)Mention the care to be taken for children before and after vaccination?

UNIT-2

WEANING

STRUCTURE

2.1 IMPORTANCE OF WEANING

2.2 SUPPLEMENTARY FEEDING STAGE -LIQUID, SEMI SOLID& SOLID SUPPLEMENTARY FOODS DURING 6 MONTHS TO 2 YEARS

2.3 PRINCIPLES TO BE FOLLOWED WHILE INTRODUCING SUPPLEMENTARY FOODS

Learning objectives:

By the end of the unit,

The student will be able to understand the meaning and importance of weaning

Know the meaning of supplementary feeding

Understand the stages of supplementary feeding

Learn supplementary food for 6 months to 2 years children

Need for weaning

The baby's birth weight doubles by 6 months and triples by one year to support this growth baby's need a nutritious diet.

From six months of age neither human breast milk nor infant's formula intake alone is insufficient to meet baby's growing needs and introduction of solid food to the diet is essential.

Definitions:

The word weaning comes from the word "wemain" which means accustom.

According to Cambridge dictionary weaning is to cause a baby to stop feeding on its mother milk and to start eating other foods especially solid foods.

According to medical dictionary weaning is discontinuing of breast milk, permanent deprivation of breast milk and commencement of nourishment with other foods.

Weaning is substitution of solid foods for milk in an infant diet.

Weaning is the period of transition from breast feeding to eating solid foods.

Weaning is the introduction of solid foods into a baby's diet during the first year of life.

Importance of weaning:

- ***<u>For the development of eating pattern:</u> Which helps in proper maintaining of optimal health supplementary feeding is essential.***

- ***<u>For the rapid growth of the baby child:</u> During the first year of life the baby grows more quickly than any other time. For this rapid growth the baby needs increasing amounts of energy and nutrients.***

- ***<u>Increasing needs of calories and proteins:</u> Increasing needs of calories and proteins of growing children cannot be met by output of mother's milk. Milk is also poor source of vitamin C and D should be supplement in form of fruit juice. For the baby to maintain expected growth and to remain healthy and well nourished supplementary food is given from about six months of age.***

- ***<u>Need of iron rich foods :</u> Iron stored in the liver of the infant would last only upto four months. Hence iron rich foods should be given at least from six months onwards.***

- ***<u>Imitating parents/Adults food habits:</u> Imitation is one of the milestone in child's life. By copying adults during this year of growth children learn a vast array of skills. During the latter part of first year they may not want to held as close to mother as before showing an increased drive to move about. They can be helped to drink from a cup at about 5 months of age. By 8-9 months they enjoy imitating parents who drink fluids this manner.***

Weaning is important to infant health. It teaches him the value of separation from mother and parents.

- ***Separation anxiety***
- ***Fear of strangers***
- ***Beginning of language***
- ***Beginning of crawling and latter walking***
- ***Teething***
- ***Development of digestion of solids***
- ***Development of waste out processes***
- ***First night mares and language development.***

Fear of under nutrition:

Though Indian baby are given supplementary foods, the introduction difference is either too late or too early. The age of introduction of supplementation is 3-5 months in urban, elite and middle income group. The supplementation delayed in urban poor by 7-9 months and rural poor by 9-11 months. Introduction weaning food to late can need food under nutrition and increased diarrhoeal morbidity.

PRINCIPLES TO BE FOLLOWED WHILE INTRODUCING SUPPLEMENTARY FOODS

- ***Introduction to a solid food should be a pleasant experience.***
- ***A new solid food is introduced when the infants is relatively hungry.***
- ***A spoon with a small bowl and a long straight handle is used to place the food in the mouth of infants.***
- ***The food is placed toward the back of the infants tongue but no pressure is exerted since that would cause gagging.***
- ***A small serving 1 to 2 teaspoon of a new food is offered initially. The amount is gradually increased to 1 to 2 tablespoon at a feeding.***
- ***New foods are introduced one at a time.***

- ***The infant should be permitted to touch the food and feel the textures of various foods.***
- ***Food should be slightly seasoned.***
- ***At first strained food, vegetables and cereals are given***
- ***Infants should be permitted to stop eating when they indicate willingness to stop***
- ***The infant should not be hurried nor coaxed to eat.***
- ***A variety of new foods should be in traduced during the second 6 month of the life because during the toddler period when growth slows down and the appetite is decreased the child will b e less willing to try them.***

Some of the supplementary foods are

- ***Fruit juices (4 months) (Tomato and orange juice)***
- ***Greens soup (6 months)***
- ***Stewed apple (8 months)***
- ***Soft custard with egg yolk (8 months)***
- ***Khichdi (pongal) (10- 12 months)***
- ***Poshak (Cereal, pulse, groundnut and jaggery)***
- ***Malted cereals and gruel made of rice flour, rice, rice flakes, corn flakes and milk.***

PROBLEM IN WEANING:

1. ***Inadequacy in quantity and hence malnutrition.***
2. ***Unhygienic feeding practices leading to enteric infections and diarrhoea.***
3. ***Personal likes and dislikes of the child.***
4. ***Refusal of the child to accept weaning foods.***
5. ***Allergy***
6. ***Choking***
7. ***Obesity***

Different stages involved in providing supplementary foods:

Liquid supplements:

Milk: At about the sixth month of life the frequency of breast feeding is reduced to 3 or 4 times per day and animal milk is substituted.

Juice of fresh fruits:

Oranges, tomatoes, sweet lime, grapes serve to supplement the protective nutrients not present in sufficient amounts in breast milk as well as in animal milk. It is advantageous to start feeding small quantities of fresh fruit juice even the 3^{rd} or 4^{th} month of life. In the early stages the fruit juice is diluted with an equal amount of boiled water and only a couple of teaspoonfuls are fed.

Soup from green leafy vegetables:

In case fresh fruits are not available, green leafy vegetables may be used as an alternative.

b.) Solid supplements mashed well before feeding:

Mashed food is started around the 7^{th} or 8^{th} month of life. Around this time the infant is already receiving animal milk, fruit juice or vegetable soup and fish liver oil.

Cereal and starchy gruel:

To meet the increased demands of calorie and protein well cooked mashed cereals mixed with milk and sugar can be given.

Other cereals like rice, rice flour, rice flakes, corn flakes can also be given on the form of porridge.

Vegetables:

Cooked, mashed vegetables like potato, green leafy vegetables, carrots etc. can be introduced to get vitamins and minerals and colours in the diet.

Fruits:

All fruits with the exception of banana which is mashed must be stewed and sieved for the one year old baby. There after it is given simply stewed with addition of little sugar and lime –juice for flavour.

Non vegetarian foods:

A small amount of hard boiled yolk of egg is given to start with and if the infant tolerates the amount may be gradually increased to a complete yolk of an egg.

Yolk is good source of vitamin A, iron and protein. Soft custard is also a suitable way in which to introduce egg yolk.

Pulses:

Well cooked pulses along with cereals in the form of khichdi/ pongal can be given or can be made into porridges. Pulse and meat preparation can be given alternate days.

Solid supplements unmashed:

When the baby starts cutting his teeth it is time to start changing him over to chopped and lumpy foods. Cooked cereals, pulses and vegetables can be given to the child. Vegetables may be chopped into small pieces, and boiled. Cooked potato can be given. After a year, leafy vegetables can be given well boiled and soft. A slice of a raw carrot or fruit segments with all skin and seeds removed are also good exercise for his gums. As the child grows it is better to give fruit segments instead of juice. Fruit provides bulk in the diet and good for bowel movement.

SUMMARY

Infants in our country thrive on breast milk alone up to six months of life and their growth rate during this period is satisfactory. Breast milk alone is not able to provide sufficient amounts of all the nutrients needed to maintain growth after the first six months. Increasing needs of calorie and proteins of growing children cannot be met by the diminishing output of mother milk's.

Weaning is the process in which infant's diet pattern is gradually changed from liquid foods like breast milk or substitute milk preparations to solid foods.

The foods that are given in addition to breast milk or bottle milk are called supplementary foods

After 5 or 6 months mother's milk or bottle milk alone cannot meet the requirements of the growing baby. Hence the parent should provide supplementary foods to the children.

During the first stage one should introduce liquid foods then semi solids foods and at last solid foods should be given.

Short answer type questions

1) ***Define weaning and need for weaning.***

2) ***List out the problems faced by adults while feeding the children?***

Long answer type questions

1) ***What are the different stages involved in providing supplementary foods for children?***

2) ***What are the principles to be followed while introducing supplementary foods for children?***

Unit -3

Nutritional needs of children (Birth – 3 years)

Structure

3.1 Importance of nutrition, relationship between food and health, functions of food.

3.2 Nutrient requirements of children

3.3 Planning balanced diet

Learning objectives

By the end of the unit

The student will able to understand

Know the importance of nutrition.

Understand the nutrient requirements of children.

Plan balanced diet.

Introduction

Good nutrition is essential for maintaining life. The objectives of good nutrition for children are to promote optimal growth and development, to prevent nutritional deficiency, to help prevent acute and chronic illnesses and to provide reserves for stress. Every child needs nutrition to grow and to develop into a happy and healthy child.

The child growth is determined by heredity which is provided by food and conditions favourable to the physiological process that convert food into body tissues.

Gain in weight and height are best indications to assess the child growth Muscles grow in size and strength which require protein and in organs salts to develop. The brain ,kidney ,digestive systems helps the infant to handle more and more complex food items starting from breast milk at birth to solid food by the end of the year.

RELATION BETWEEN NUTRITION AND HEALTH:

Food effects health and nutrition that nutrition can be the limiting factor in growth and development.

A child who does not eat the right food or does not eat enough is malnourished and it is called malnutrition.It is very common among children in India.

The word nutrition comes from the word nourish which implies the food consumed by us and all the reactions through which it is utilised for physical growth, energy and better health.

Nutrients are naturally occurring chemical substances present in the food which are

(1)Carbohydrates

(2)Proteins

(3)Fats

(4)Vitamins

(5)Minerals

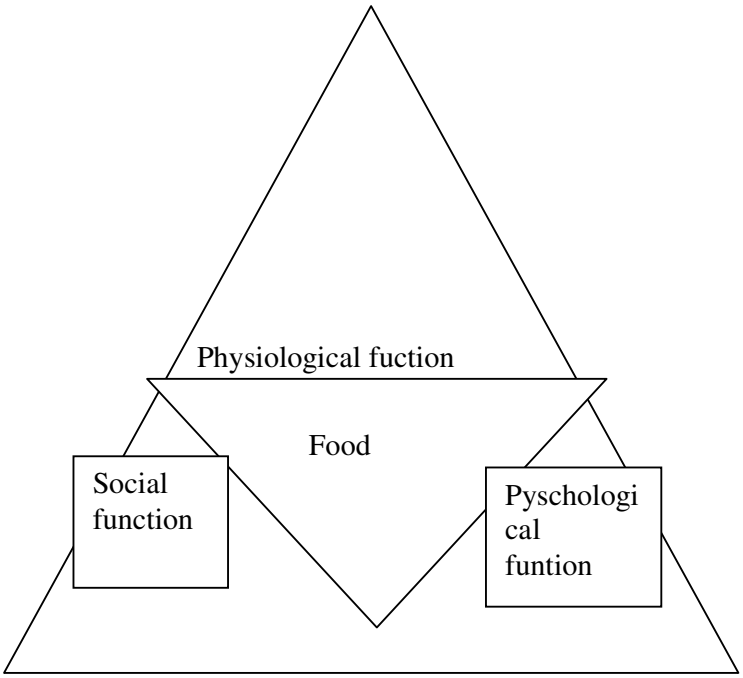
(6)Water

Here is a comparison of the effects on children of good nutrition and malnutrition.

GOOD NUTRITION	*MALNUTRITION*
Correct weight for height and age	*Weight too much or too little*
Strong muscles	*Weak muscles*
Limbs straight	*Bow legs or knock knees*
Smooth clear skin good colour	*Skin dry and rough*
Healthy bright eyes clear sight	*Eyes dull ,poor sight or loss of sight*
Hearing good	*Hearing poor*
Teeth well formed from dental caries	*Uneven teeth ,dental caries, spongy gum*
Erect posture in sitting ,	*Round shouldered*
Standing and walking	*Protuding abdomen*
Plenty of energy	*Tired and listless*

Good resistance to infections	*Poor resistance to infections*

FOOD PERFORMS THREE FUNCTIONS



Physiological function - giving energy, building body and protecting the body

Social function - foods served at social events to share happiness and joy.

Psychological function

When a mother cooks food that a child likes and serves it to her child, the basic psychological need that is love and affection is satisfied through the medium of food.

NUTRIENTS REQUIREMENTS OF CHILDREN: 0-3 years:

For maintaining good health physical efficiency, the diet should provide adequate amounts of all nutrients

The term recommended dietary allowances is defined as the amount of nutrients sufficient for maintenance of health in nearly all people .

The RDI'S for infants are given in two stages (ie 0-6 months and 6-12 months) as rapid growth takes place during the first 6 months

Table-1 Recommended Dietary Allowances for children up to 3 years

NUTRIENTS	*0-6 MONTHS*	*6-12 MONTHS*	*1. 3years*
ENERGY(Kcal)	*108/Kg*	*98/Kg*	*1240*

PROTEIN(g)	***2.05/Kg***	***1.65/Kg***	***22***
CALICUM(mg)	***500***	***500***	***400***
IRON(mg)	***70/Kg***	***70/Kg***	***12***
VITAMIN A(mcg)	***350***	***350***	***400***
THIAMINE(mg)	***55/kg***	***50/kg***	***0.6***
RIBOFLAVIN (mg)	***65/Kg***	***60/Kg***	***0.7***
NIACIN(g)	***701/Kg***	***650/Kg***	***8***
PYRIDOXINE (mg)	***0.1***	***0.4***	***0.9***
ASCROBIC ACID(mg)	***25***	***25***	***40***
FOLIC ACID(g)	***25***	***25***	***30***
VITAMINB12 (g)	***25***	***25***	***0.2-1***

The total amount of nutrients required infants may be smaller as compared to but when expressed in terms of per kg body weight the need is over twice as much for most nutrients.

Calories:

The calorie requirement depends on physical activity, body size and composition, age, sex, physiological state and climate and environment.

The daily calorie requirement (kcal) recommended by the nutrition expert group ICMR are as follows: Infants (upto 1year) 120/kg Infants (7-12 months)100/kg; children (aged 1-3 years)1200.

As growth during infancy is very rapid dietary adaptation is required. During early infancy much of the nutrients requirements are met by breast feeding the child Infants require

more energy than adults. Infants require 108 K.Cal/ kg body weight whereas an adult requires only 40kg body weight. For one month old infants 50 percent for activity and 25 percent for growth. Extremely active children may require up to 40 percent for activity. A child who walks or crawls will not gain weight unless additional calories are supplied for proper growth

Seventy percent of the calories for infants can be met by milk alone and rest of the calories has to be supplied by the supplementary foods after 6 months.

- ***Carbohydrates supply energy to the body. One gram of carbohydrates provides four calories of energy.***

- ***Carbohydrates in food contain dietary fibres that help in the digestion of food and removal of wastes from the body.***

Food rich in carbohydrates:

All foods that contain starch are rich in Carbohydrates.

Cereals and millets such as rice, wheat, ragi, oats, jowar and bajra are some rich sources of Carbohydrates . Other foods such as sugar, jiggery, honey, ripe fruits and undergoes vegetables like yam and colocasia alos provide a high content of Carbohydrates pulses nuts and oil seeds also provide carbohydrates

PROTEIN

Like calories infants protein requirements are higher per kg body weight compared to adults due to increased demands for skeletal and muscle growth. Human milk provides all the aminoacid more than required amount needed for proper growth. Protein content of human milk is 1.1 ml or 6% total energy protein requirement per kg. Body weight decreases gradually during the first 12 months as do energy requirements.

Proteins help a child

- ***In the growth of body and for the maintenance and repair of tissues.***

- ***For the production of antibodies to prevent children form diseases.***

- ***For the production of enzymes and hormones for regulating the body function.***

- ***Foods rich in proteins***

➢ ***From what foods can a child get proteins?***

➢ ***Proteins are available in both plants and animal products. Pulses and legumes such as dals, soyabeans and their commercial products such as soya milk, soya nuggets and soya granules are also rich sources of proteins. Nuts and oil seeds such as ground nuts, gingerly seeds are some rich sources of proteins from plants.***

➢ ***Milk and milk products are also rich in proteins. Animal products like eggs, meat, poultry and sea foods contain good quality proteins.***

FAT AND FATTY ACIDS

Linoleic acid is the most important essential fatty acid for an infant. Infants maintained on diets adequate in all nutrients except fat develop skin lesions and diarrhoea and growth is retarded. With supplementation of linoleic acid, symptoms disappear. Food and nutrition board suggest 2% calorie intake should be a EFA. Both cow's milk and mother's milk satisfy the requirements of EFA

FATS

Fats provide:

➢ ***Double the quantity of energy as compared to carbohydrates one gram of fat gives nine calories of energy.***

➢ ***Essential fatty acids.***

➢ ***Fats dissolve fat soluble vitamins like vitamin A, D, E and K.***

➢ ***Fats provide protection to the vital organs of the body.***

➢ ***Fats help in maintenance of the body temperature.***

Foods rich in fats

Fats are present in vegetable oil like groundnut, til, soybean, sunflower, etc. They are also found in animal products such as butter, ghee, cream, cheeses, and meat.

Calcium and phosphorus:

Rapid growth requires large amount of calcium and phosphorus . adequate prenatal nutrition supply a store of bone minerals to prevent rickets provided post –natal care furnishes a liberal supply of calcium and phosphorus. Large percentage of calcium from breast milk is retained by the infant .Bones are poorly calcified at birth .Rapid rate of calcification of bone is needed to support the weight of body by the time the baby walks

when sufficient calcium is not supplied to the infant, his motor development is delayed. High phosphorus can lead to hypocalcemic neonatal tetany.

Iron:

RDA of iron for an infant is Img/kg/day starting from 3 months. At birth body contains 75mg./kg. This is about 3times that of an adult .During the first 4 months ,the baby's blood volume doubles and concentration of iron in haemoglobin falls to about half that present at birth .That is why infant doubles his birth weight by six months without depending on dietary iron. Low birth weight infant,requires dietary iron earlier in life. Premature infants are susceptible to anaemia . Hypochromic anaemia can occur in infants due to (a) depletion of fetal stores (b) greater need for iron during growth and (c) inadequate dietary supply.

Zinc:

High levels are present in colostrum and it promotes normal growth .zinc is necessary for normal brain development.

Sodium :

Intake of sodium by breast fed infant is less than 1/3rd that of one fed on cow's milk .This smaller amount present in human milk is considered adequate.

Iodine:

Goitre in mothers during pregnancy leads to children born as cretins. They are mentally retarded and condition is irreversible even after treatment.

Vitamin A:

The RDA for vitamin A is 350mcgor beta carotene 1200mcg. The amount of vitamin A content of breast milk is sufficient .Provided mother's diet is rich in vitamin A. A healthy infant has sufficient stores of vitamin A in liver at birth which may last for six months. Egg yolk is supplemented in the infants' diet for vitamin A .Excess vitamin A leads to anorexia, hyper irritability and desquamation of skin.

Vitamin D:

It is essential for utilisation and retention of calcium and phosphorus Neither human nor cows milk provide vitamin D to prevent rickets. A good supply of vitamin D during pregnancy benefits the mother and helps satisfactory development of the infant .The vitamin D requirement of child is placed between 200-400 I. U. This requirement may be obtained in great measure in tropical countries through exposure to adequate sunlight . It is necessary to avoid large amount of vitamin D to prevent hypervitaminosis D.

Vitamin E:

Food and nutrition board has prescribed 5 I.U of vitamin E for first year . cows milk is a poor source of vitamin E

Vitamin K:

The new born is susceptible to haemorrhage caused by lack of vitamin K. Breast fed baby is more susceptible than artificially fed. Deficiency of vitamin K in children can occur if mothers have received anticoagulants .A single dose does of 1mg of water miscible form of vitamin K immediately after birth is considered adequate to prevent haemorrhage . Excess dosage is harmful.

Vitamin B :

RDA for B vitamins is based on the weight of the infant which is in reality determined on calorie consumption .B vitamin requirements of Indian infants are not directly determined experimentally and they are computed on the basis of their calorie needs . If the mothers are suffering from thiamine deficiency, there is very little thiamine content in the breast milk The onset of infinite beriberi is sudden in infants who are healthy Anorexia ,vomiting, breathlessness are developed and death may occur unless treatment thiamine is given by intramuscular infection . When antibiotics are taken by the infant the requirements for B 12 is increased .

Vitamin C:

The RDA prescribed ICMR is 25 mg. Human milk contains twice the ascorbic acid in comparison to cow's milk though both are not good source of vitamin C .Deficiency in mothers during pregnancy and lactation results in very little reserve of vitamin C in body . If less vitamin C is present in breast milk infant may develop scurvy. Suddenly the body swells due to internal bleeding and condition is fatal. Fruit juice should be introduced in sufficient amounts in the diet from the 4^{th} month onward to prevent scurvy.

Refer table ii for vitamins and minerals their sources and functions

Vitamins	*Functions*	*Rich sources*
Vitamin A	*Growth* *Healthy of eyes (necessary for clear vision in dim light)* *Health of skin*	*Dark green vegetables, yellow fruits and vegetables, Butter, ghee, egg yolk, fish*
Vitamin D	*Formation of bones and teeth, calcium metabolism*	*Milk, butter, ghee, fish, egg yolk, natural sunlight*

Vitamin E	***For health of heart, sex hormones***	***All vegetable oil***
Vitamin K	***For blood clotting***	***Green leafy vegetables, cereals***
Vitamin C	***For gum formation, healing of infections and wounds***	***All citrus and fresh fruits and vegetable sprouts***
Vitamin B	***Growth, carbohydrate metabolism working of heart and nerves***	***Unpolished rice, wheat, yeast, pulses***
Vitamin B2	***Growth protein metabolism health of eye***	***Milk and milk products, yeast, green vegetables, eggs, liver, meat***
Naicin	***Growth for carbohydrate, fat and protein metabolism***	***Wheat, pulses, nuts, tomatoes, green leafy vegetables***
Vitamin B6	***Growth health of skin, muscles and nerves***	***Green vegetables, meat, liver***
Vitamin B12	***Formation of blood***	***Milk, meat and liver***
Folic acid	***Formation of blood***	***Green vegetables, pulses***

Minerals	***Functions***	***Rich sources***
Calcium and phosphorous	➢ ***Formation of bones and teeth*** ➢ ***Clotting of bold, proper functioning of heart muscles***	***Milk and milk products, green leafy vegetables, cabbage, ragi, bajra, jowar and gingely seeds.***

Iron	***Formation of blood***	***Green leafy vegetables, egg yolk, gingely seeds, dry fruits, jiggery and animal products, cereals and millets***
iodine	***For production of thyroid hormone, for mental and physical growth***	***Fish and iodised salts***

PLANNING OF BALANCED DIETS:

Before planning the balanced diet one must know what is a balanced diet and importance of different food groups.

The infants as well as young child needs more nourishing food than an adult. An active and healthy child needs food for energy. Maintenance of the body and repair of wear and rear of the body tissues. In addition, extra nourishment is required to provide for the continuous growth of the body and for the increased range of activities as the child grows. These nutritional requirements of a child can only be fulfilled by providing a well balanced diet.

A balanced diet may be defined as one which contains the various groups of food stuffs such as energy yielding foods, body building foods and protective foods in the correct proportions .so that an individual is assured of obtaining the minimum requirements of all nutrients. The components of a balanced diet will differ according to age, sex, physical activity, economic status and the physiological state, viz, pregnancy, lactation, etc.

Food groups

Food groups	***Example***
1) Cereals and millets	***Rice wheat oats maize barley jowar bsjra ragi.***
2) Pulses and legumes	***Dals like thoor dal chana dal urad dal moong dal beans***
3) Eggs	

4)	*Nuts and oil seeds*	*Groundnut coconut walnut pista gingely sunflower safflower*
5)	*Vegetables*	*Root leafy and other vegetables*
6)	*Fruits*	*Ripe and seasonal fruits*
7)	*Milk and milk products*	*Milk curds buttermilk cheese paneer*
8)	*Animal foods*	*Meat chicken and sea foods*
9)	*Oils and fats*	*Vegetables oils, butter and ghee*
10)	*Sugar and jiggery*	*Refined sugar and jiggery*
11)	*Condiments and spices*	*Turmeric chilly ginger garlic coriander fenugreek etc*

Balanced diets at high cost:

Such diets will include liberal amounts of costly foods such as milk, eggs, meat, fish and fruits and moderate quantities of cereals, pulses, nuts and fats.

Balanced diets at moderate cost:

These diets will include moderate amounts of milk, eggs, meat ,fish ,fruits, and fats and liberal amounts of cereals , pulses, nuts , and green leafy vegetables.

Balanced diet at low cost

These diets will include small amounts of milk , eggs, meat, fish and fats and liberal amounts of cereals, pulses, nuts and green leafy vegetables.

Planning of balanced diet:

Before planning a diet to children one should follow the dietary guide lines which were given as follows

The diet should be adequate in quantity and quality of different nutrients in addition to the amount of milk , the pre school child should have two small servings of protein rich foods . when the child is about 18 months old , finger foods such as carrots can be given.

Proper elimination is usually maintained by a diet of fruits , vegetables and whole grain products.

The diet should include a variety of foods . the child who is taught to eat everything on his plate is much more likely to enjoy optimal health than is the one who picks and chooses .the child should have access to all items from all food groups on a regular basis.

Their food intake will improve if the food is interesting and attractive ,for example chapathis,puris can be made into different shapes or can be served in attractive plates .flavour or colour milk can be changed to encourage the child to drink more milk.

Foods should be slightly seasoned so that they taste better and the child likes the tastes and takes it well .

Child should never be forced to eat more than he can take .

The person feeding the child with the food should not show any disinterest or dislike of that food in front of the child . this may lead to rejection of food by the child.

Children are sensitive to flavours , any changes in flavour of daily food may lead to its rejection .

Food preferences of the child should be taken in consideration.

Regularity of meal times is essential .

Different cooking methods and new attractive combinations encourage the child to eat more.

The child should never be hurried while taking the food . the atmosphere should be pleasant , peaceful and lacking distraction.

The energy density should be 1.0 to 1.2k. cal/ml. this can be achieved by adding milk and oil to the diet. Malted foods can also be included in the diet to increase the calorie density of food.

Unripe bananas and apples should not be given as they are difficult to chew and may choke the child.

Young children should not be fed with bulky staple foods which fill the child's stomach and lessens the child's hunger without meeting the energy needs.

Balanced diet for a child belonging to 1-3 years old for a day

Sample menu :

Balanced diet for 1 to 3 years

Sample menu

Early morning (6.30 a.m.) Milk 1 cup

Breakfast (7.30 a. m.) Dosa 2+ chutney and sambar (veg)

Or

Two slices of brown bread and omlette (non veg)

Mid morning (10.30 a.m.) Any fruit + chikki.

Lunch (12.30 p.m.) Rice -1 katori , vegetable curry -1/2 katori, thick dal-1/2 katori.

Snack (4. 30 p.m.) Murmura mixture -1 katori , ragi malt-1 cup ,fruit -

Dinner (7.00 p.m.) Chapathi -2 , green dal -1/2 katori

Sprout salad -1 tbsp & curd rice -1/2 katori

Or

Rice -1 katori , meat / chicken / fish curry -1/2 katori , and vegetable raita

Bed time (9.00 p.m.) Milk 1 cup.

Summary:

Nutrition is the basic human need and prerequisite to a healthy life.

Nutrients that we obtain through food have vital effects on physical growth and development ,maintenance of normal body function, physical activity and health .nutritious food is thus needed to sustain life and activity.

The first years of life (up to 3years of age), characterised by rapid physical development is a period in which many changes that affect feeding and food intake occur .the adequacy of nutrient intake affects the interaction of children with their environment .diet has a remarkable effect on child's physical and mental development.

Diet affects the health of the child in two ways . Directly as deficiency diseases like kwashiorkor ,marasmus etc and indirectly by reducing the resistance power of an individual.

Healthy well nourished children have the energy to respond to and learn from the stimuli in their environment and interact with their parents and care givers in a manner that encourages bonding and attachment.

. The diet should be adequate in quantity and quality of different nutrients.

. Regularity of meal times is essential.

. Many factors like cultural, social and family etc influences the meal planning.

. Mothers or care givers have a big job for planning different kinds of diets to fulfilthe nutritional needs of the children.

SHORT ANSWER TYPE QUESTIONS:

1. ***Enlighten on importance of nutrition for a healthy life?***
2. ***What is balanced diet?***
3. ***Write about the importance of zinc , sodium and Iodine during the infancy stage?***

LONG ANSWER TYPE QUESTIONS:

1. ***Write in detail about the nutritional requirements of children up to 3 years?***
2. ***What are the steps involved in planning a balanced diet for children of 1-3 years?***

UNIT -4

STRUCTURE

4.1 Meaning of nutritional deficiency disease

4.2 Some of the nutritional deficiency disease

LEARNING OBJECTIVES

By the end of unit, student will be able to:

. Learn the meaning of nutritional deficiency disease

. Recognise the symptoms of different kinds of nutritional deficiency diseases

. Know the cause of nutritional deficiency disease

. Suggest prevention of nutritional deficiency disease

Meaning of Nutritional deficiency disease

Nutrition is a major factor in bringing out the maximum potentially that one isendowed with both physically and mentally. Good nutrition depends on an adequate food supply and food distribution

Deficiency of one or two nutrients in diet is called nutritional deficiency. Generally it is expressed as malnutrition.

A nutritional deficiency occurs when the body doesn't absorb or get from food the necessary amount of nutrients. Deficiencies can lead to a variety of health problems. These can include digestion problems, skin disorders, stunted or defective bone growth and even dementia.

Nutrient deficiency diseases occur when there is absence of nutrients which is essential for growth and health. Lack of food leading either malnutrition or starvation gives arise to these diseases. Another cause for a deficiency disease may be due to a structural or biological imbalance in the individual metabolic system.

Though malnutrition can occur at any age the main victims are children. Kwashiorkor, marasmus and keratomalacia which used to be a major public health problem till the 1960s have declined since. However population at large is affected by hidden malnutrition which may not be easy to diagnose.

SOME OF THE NUTRITIONAL DEFICIENCY DISEASES:

1) ***Protein energy malnutrition.***
2) ***Kwashiorkor.***
3) ***Nutritional marasmus.***
4) ***Vitamin A deficiency.***
5) ***Vitamin B deficiency.***
6) ***Vitamin C deficiency.***
7) ***Vitamin D deficiency.***
8) ***Iron deficiency.***

PROTEIN ENERGY MALNUTRITION:

The concept has recently been advanced that protein energy malnutrition especially in early childhood, should be regarded as a spectrum of disease. At one end there is kwashiorkor in which the essential features of quantitative and qualitative deficiency of protein. Calories are often restricted but may even be in excess of requirements. At the other end is nutritional marasmus which is a total initiation of the infant usually under 1 year of age and due to a severe and continuous restriction of calories and protein as well as other nutrients. In the middle of the spectrum is marasmic kwashiorkor in which children have the clinical features of both disorders.

Symptoms

- ***The muscle look wasted and the child looks thin***
- ***The belly looks prominent***
- ***Child is restless and not responsive***
- ***Hair looks light or reddish instead of dark***

Causes

- ***Due to poverty mother is not able to provide sufficient food for children resulting in under nutrition***
- ***The starchy gruel (semi solid food)made from rice, bajra, ragi, jowar and maize would result in dietary bulk with low calorie intake and the child is not able to meet calorie requirement. Malted foods meet the calorie requirement***

- ***Abrupt weaning, late weaning, ignorance of importance of weaning.***
- ***Malnutrition***
- ***Chronic infections***
- ***Infestation like ascariasis particularly giardiasis may lead to anorexia***

Prevention:

- ***Providing a nutrition education to mothers of children below 6 years of age***
- ***Introducing supplementary foods at the right age***
- ***Eliminate faulty food habits***
- ***Make use of locally available food(fruits and vegetables)***

KWASHIORKOR:

It is malnutrition produced by a severely inadequate amount of protein in the diet . This is known as edematous malnutrition because of its association with edema. It is a nutritional disorder most often seen in regions experiencing famine.

Symptoms of kwashiorkor:

- ***Change in skin and hair colour***
- ***Fatigue***
- ***Diarrhoea***
- ***Loss of muscle mass***
- ***Failure to grow or gain weight.***
- ***Edema***
- ***Damaged immune system which can lead to more frequent and severe***
- ***Sagging cheeks***
- ***Swollen eye lids***
- ***Enlarged liver***
- ***Flaky rash***

Diagnosis

- ***If kwashiorkor is suspected***

  The following is the procedure of diagnosis

- ***Checking for enlarged liver and swelling.***
- ***Blood and urine tests(to measure the level of protein and sugar in one's/person's blood)***
- ***Tests for muscle break down***
- ***Tests of kidney function***

  These tests are included

- ***Arterial blood gas***
- ***Blood urea nitrogen***
- ***Blood levels of creatinine***
- ***Blood levels of potassium***
- ***Urianalysis***
- ***Complete blood count***

  Treatment

  Kwashiorkor treatment consists of diet modification. Slow increase in calories followed by an increase in protein.

  Supportive care: Oral dehydration therapy

  Self care

  High protein diet Vitamin and mineral breast feeding supplementation and infants formulae.

  MARASMUS:

The word marasmus comes from the greek word marasmus- withering

Marasmus is a form of severe malnutrition characterised by protein deficiency. It can occur in anyone with serve malnutrition but usually occurs in children. A child with marasmus looks emaciated. Baby weight is reduced to less than 62.36% of normal body weight for the age

Cardinal features of marasmus

- ***Severe growth***
- ***Loss of muscle mass and subcutaneous fat mass***
- ***Severe muscle wasting***
- ***Dry skin***
- ***Brittle hair***

In children with marasmus the following can also occur:

- ***Chronic diarrhoea***
- ***Respiratory infections***
- ***Intellectual disability***
- ***Stunted growth***
- ***Dehydration***
- ***Tachypnea***

Marasmus can also make children short tempered and irritable.

Treatment:

Patients with marasmus should isolated from other patients especially children with infections.

Bathing should be avoided to limit hypothermia

Oral antibiotics

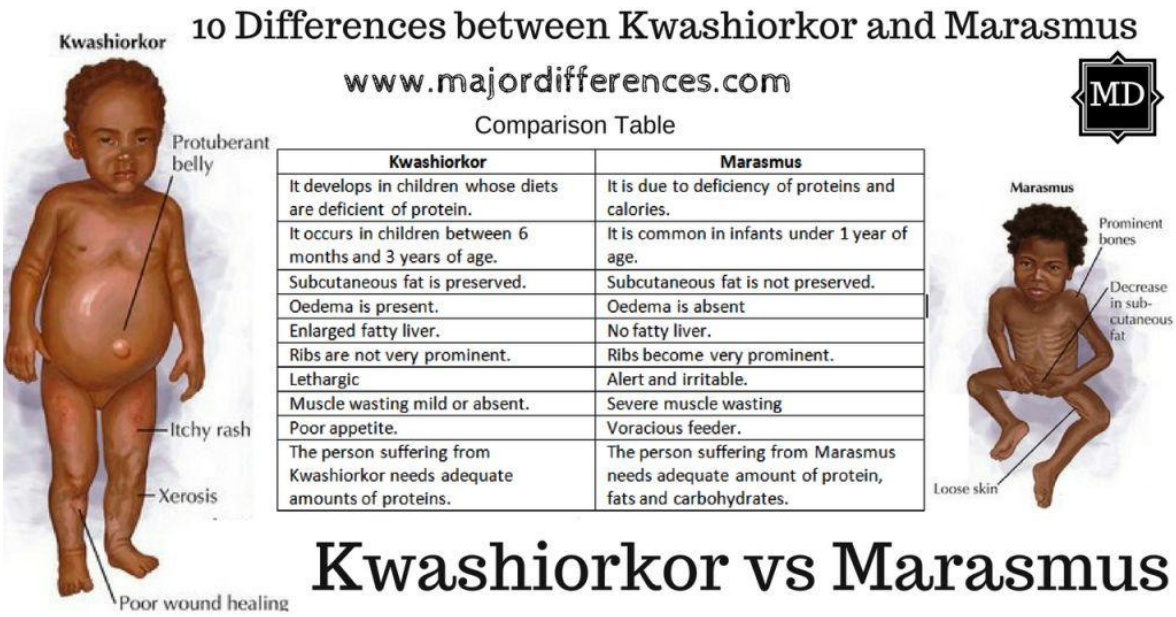
Good sanitation and hygiene

Using boiled water for cooking, drinking diet treatment rich in nutrients.

Carbohydrates and calories : Feeding is usually done in small amounts and through tubes to the veins and stomach.

Prevention

The best way to prevent marasmus is to have a well balance diet. Foods rich in protein like skimmed milk. Fish, eggs, nuts, Fresh vegetables, fruits etc are avoiding malnutrition very important.



Kwashiorkor	Marasmus
It develops in children whose diets are deficient of protein.	It is due to deficiency of proteins and calories.
It occurs in children between 6 months and 3 years of age.	It is common in infants under 1 year of age.
Subcutaneous fat is preserved.	Subcutaneous fat is not preserved.
Oedema is present.	Oedema is absent
Enlarged fatty liver.	No fatty liver.
Ribs are not very prominent.	Ribs become very prominent.
Lethargic	Alert and irritable.
Muscle wasting mild or absent.	Severe muscle wasting
Poor appetite.	Voracious feeder.
The person suffering from Kwashiorkor needs adequate amounts of proteins.	The person suffering from Marasmus needs adequate amount of protein, fats and carbohydrates.

Differences between marasmus and kwashiorkor:

Marasmus	*kwashiorkor*
Weight loss dehydration stomach shrinkage diarrhea	*An inability to grown or gain weight edema or swelling of hands and feet stomach bulging*
It develops in children whose diet are deficient of protein and calories	*It develops in children whose diets are deficient of protein*
It is common in infants under 1 year of age	*It occurs in children between 6 months and 3 years of age*
Subcutaneous fat is not present	*Subcutaneous fat is present*
Oedema is absent	*Oedema is present*
No fatty liver	*Enlarged of liver*
Ribs become very prominent	*Ribs are not very prominent*
Aleet and critable	*Lethargic*
Serve muscle wasting voracious feeder	*Muscle wasting mild or absent poor appetite.*

MARASMIC KWASHIORKOR:

The child shows a mixture of some of the features of marasmus and kwashiorkor. This is due to the varying nature of the dietary deficiency and the social factors responsible for the disease.

NUTRITIONAL DWARFING OR STUNTING:

Some children adapt to prolonged insufficiently of food energy and protein by a marked retardation of growth.

THE UNDER WEIGHT CHILD:

Children with subclinical PEM can be detected by their weight for age or weight for height which are significantly below normal.

PREVENTION:

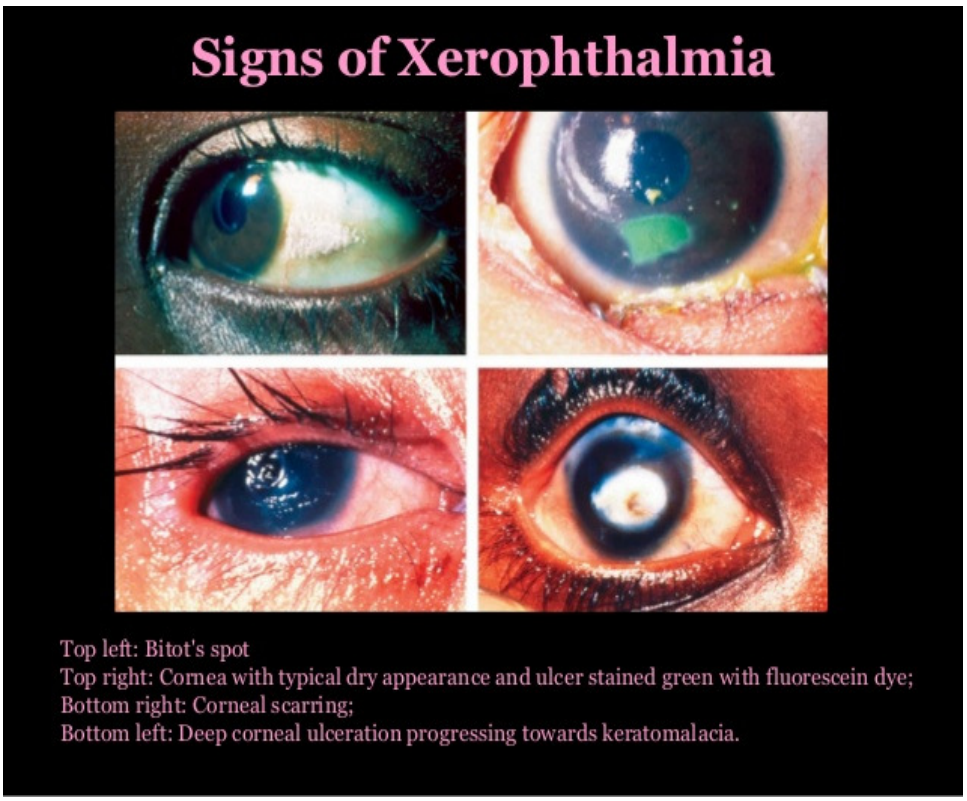
Promotion of breast milk

PEM can be controlled by health promotion – measures directed to pregnant and lactating mother

Development of lost cost weaning foods.

Measures to improve the family diet

Nutrition education.



VITAMIN A DEFICINECY:

Vitamins are a group of substances needed in small amounts by the body to maintain health. Vitamin A cannot be made by the human body and so it is essential part of the diet. Vitamin A is important for healthy eyes good eye sight, healthy skin and to help fight infections. Vitamin A is sometimes also called retinol . It is only present in foods of animal origin and food that contain Vitamin A are

- ***Milk, yoghurt and cheese***
- ***Eggs***
- ***Oily fish***
- ***Fortified low fat spreads***
- ***Liver, fish liver oils***

Plants contains carotenoids some of which have vitamin A. Most important amongst the carotenoids which is found in green leafy and orange yellow vegetables and fruits can also be converted by our body to vitamin A. A good food sources of beta carotene in your diet include. Vegetables such as carrots, sweet potatoes and red peppers, and green leafy vegetables such as spinach . Orange/yellow coloured fruit eg mango, papaya and apricots. Mild form of vitamin A deficiency can usually be treated without any long term problems. Vitamin A deficiency is much more common in developing countries where it is often very severe and can cause loss of vision and even death.

How much vitamin A child need?

The recommended daily amount of vitamin A an adult needs is 0.7mg for men and 0.6 for women.

A very high intake of vitamin A can cause problems such as rough skin, dry hair and enlarged liver.

High levels of vitamin A in pregnant women may also cause the unborn baby develop birth defeat. Therefore women who are pregnant are advised not to take any vitamin A supplements. Women who pregnant should also not eat liver or food containing liver such as liver pate or liver sausage.

Vitamin A deficiency

Deficiency or a lack of Vitamin A in one's body happen because of lack of a sufficient amounts of vitamin A in diet. Over time a lack of vitamin A means you may develop problems with vision and be less able to fight infections.

Causes of vitamin A deficiency:

Vitamin A deficiency may also occur when our body is unable to make use of the vitamin A in your diet. This may occur in a variety of illnesses including:

- ***Coeliac disease***
- ***Cron's disease***
- ***Giardiasis***
- ***Cystic fibrosis***
- ***Diseases affecting the pancreas***
- ***Liver cirrhosis***

SYMPTOMS:

Xerophthalmia is a nutritional problem. This exhibits all ocular conditions of vitamin A deficiency. Ordinarily, this is called as "dry eye". This diseases is prominently found in children between 1-3 years of age and is connected with weaning.

1) ***Night blindness :***

The speed with which the eye recovers its full powers after exposure to bright light is directly related to the amount of vitamin A that is available to form rhodopsin. When vitamin A is deficient the formation of rhodopsin is impaired giving rise to night blindness. Night blindness is an early symptom of vitamin A deficiency.unctival Xerosis :

It manifests as dry patches on non wettable conjunctiva. It may be associated with various degrees of thickening, wrinkling and pigmentation (muddy colouring) of the conjunctiva.

2) ***Bitot spots:***

It is more an extension of the xerotic process. The spots are raised muddy and dry triangular patches.

3) ***Corneal Xerosis:***

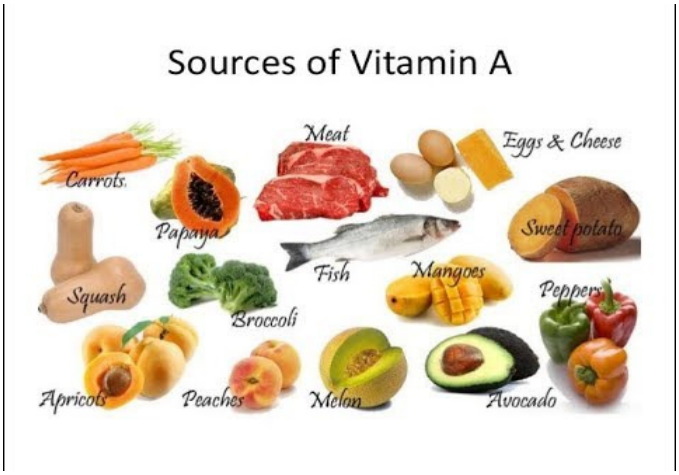
When dryness spreads to the cornea there is a dull hazy lackluster appearance.

5)Keratomalacia:

In this condition softening and dissolution of the cornea occurs.

Sources of vitamin A:

Cod liver oil, shark liver oil and liver, butter, ghee, egg, yolk, carrots, green leafy vegetables and ripe mangoes



Doses:

Infants 400IU, children 600IU, Adults750IU

Treatment:

Xerophthalmia 200,00IU of retinyl acetate orally (or)

100,000 IU of retinyl palmitate IM.

Infants <12 months half the dose

Vitamin C deficiency:

Vitamin C cannot be made by the human body and so is essential component of the diet. It is needed for the health and repair of various tissues in your body, including skin, bone, teeth and cartilage. Persistent lack of vitamin C leads to scurvy. Symptoms are easy bruising easy bleeding and joint and muscle pains. It can be treated with supplements of vitamin C and diet rich in vitamin C

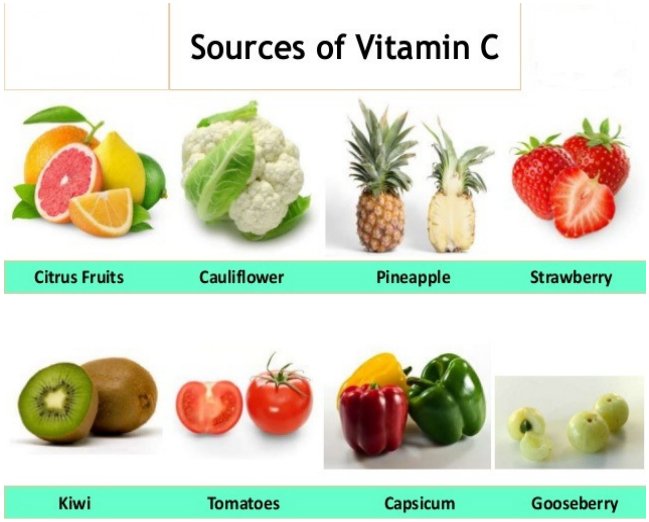
What is vitamin C:

Vitamin C is also called ascorbic acid which cannot be made by body. Vitamin C is needed to make a substance called collagen which is required for the health and repair of various tissues in the body including

- ***Skin***
- ***Bone***
- ***Cartilage***
- ***Ligaments and tendons***
- ***Blood vessel walls***
- ***Teeth***

Sources

- ***Citrus fruits like orange, grapes, lime and lemon***
- ***Berries like black currant, strawberries, raspberries, blueberries and cranberries***
- ***Cantaloupe melon and water melon***
- ***Kiwi fruit***
- ***Vegetables like Spanish, green and red pepper, tomatoes, cauliflower, cabbage, broccoli and sprouts and potatoes***
- ***Fresh milk, fish, liver and kidney***



The recommended dietry intake of vitamin C depends on age and sex

Children aged 1-10 years need 30mg of vitamin per/day

Signs and symptoms

- ***Tiredness and weakness***
- ***Easy bruising***
- ***Spots like tiny red-blue bruises in skin***
- ***Dry skin***
- ***Splitting hair***
- ***Swelling and discolouration of gums***
- ***Sudden and unexpected bleeding from gums***
- ***Nose bleeds***
- ***Poor healing of wounds***
- ***Changes in bones***
- ***Tooth loss***
- ***Weight loss***

If untreated it can lead to shortness of breath, nerve problems high temperature and fits. Bleeding inside brain and heart can cause death

Diagnosis:

A blood test can be taken to measure vitamin C levels and helps to conform the diagnosis

X-ray may be suggested because specific changes to the bones ,including 'thinning' of bones ,are often seen in vitamin C deficiency.

Treatment

Vitamin C supplements should be added in the diet

Foods rich in vitamin C can be consumed

Consulting a dietician for health

Prevention

By taking a balanced diet containing plenty of fruits and vegetables rich in vitamin C

Taking an orange will provide enough vitamin C .

B complex deficiency:

B vitamins are a group of water –soluble vitamins that play important roles in cell metabolism. In general supplements containing all eight are referred to as a vitamin B

complex. Individual B vitamin supplements are referred to by the specific name of each vitamin (B1, B2, B3, B5, B6, B7, B9 and B12).

VITAMIN B1 (THIAMINE)

Thiamine deficiency is usually associated with low calorie intake and deficiency of other factors of vitamin B complex.

Causes

Taking refined cereals, poor absorption, excessive demand during pregnancy lactation will result in deficiency

Severe deficiency of thiamine produces a disease known as beriberi. It is mainly of three varieties

1) ***Dry beriberi.***
2) ***Wet beriberi.***
3) ***Infantile beriberi.***

DRY BERIBERI.

In this disease there is involvement of peripheral nerves mainly first legs and then of arms.

Signs and symptoms

Loss of appetite

Tingling numbness and burning sensation

Calf muscle are tender, wasting of muscles complete loss of sensation also in hands and legs.

WET BERIBERI:

Signs and symptoms

Enlargement of heart

Right side heart failure such as pitting edema on extremities

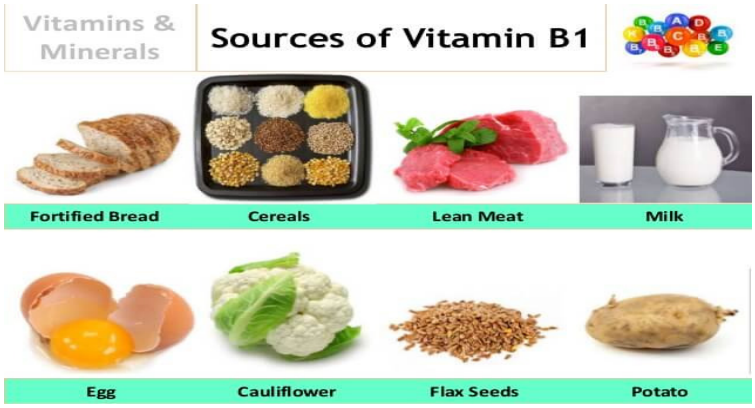
Accumulation of fluid in abdomen and chest

Palpitation

INFANTILE BERIBERI

Signs and symptoms

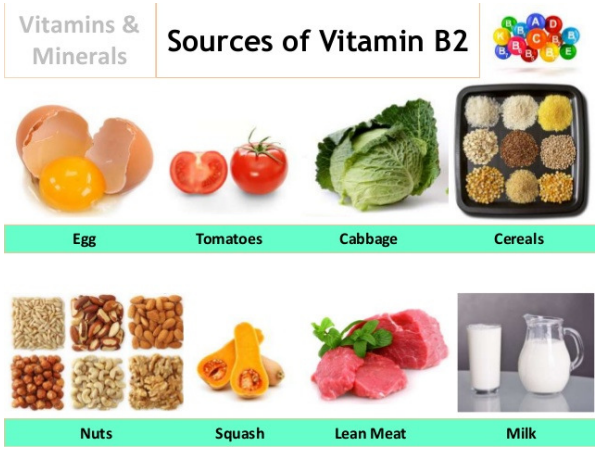
- ***Constipation***
- ***Well nourished.***
- ***Water logging.***
- ***Muffled.***
- ***Edema of glottis causes peculiar cry.***
- ***Breathlessness.***



VITAMIN B2 (RIBOFLAVIN)

Signs and symptoms of deficiency

1) ***Angular stomatitis, cheilitis and nasolabial seborrhoea***
2) ***There is glossitis***
3) ***There may be scrotal dermatitis.***
4) ***Skin dryness.***
5) ***Redness of eyes***
6) ***Ulceration of face.***



VITAMIN B3 DEFICINECY

Deficiency of nicotinic acid causes a disease known as pellagra.

1) ***Dermatitis***

2) ***Diarrhoea***

3) ***Dementia***

Dermatitis: name pellagra comes from pelle skin and agra rough. Marked changes occur in the skin especially in the skin exposed to the sun and friction areas like elbows, extensor surfaces of arms, knees, scrotal and perineal region

Diarrhoea: Diarrhoea enhances the deficiency state.

Dementia: It occurs due to involvement of nervous system.

VITAMIN B6 (PYRIDOXINE)

Vitamin B6 is also called pyridoxine which is a water soluble nutrient that is part of the B vitamin family. These help

- ***To support adrenal functions***
- ***To maintain healthy nervous system***
- ***Necessary for key metabolic processes***
- ***Liver function, skin health, eye health as well as***
- ***It helps to boost levels of energy***
- ***It helps to make haemoglobin that carries oxygen in red blood cell through the body***

- ***T o provide energy from the food that we eat***
- ***To balance blood sugar levels***
- ***To act as a natural pain treatment***
- ***To boost mood***
- ***To create antibodies that our immune system uses to protect us***

Symptoms

- ***Change in mood***
- ***Irritability***
- ***Anxiety***
- ***Depression***
- ***Confusion***

Vitamin B6 several derivatives (Pyridoxal, pyridoxal 5 – phosphate and pyridoxamine) these are all important compounds involved in numerous biological functions. Vitamin B6 is used by the body in may on functions including movement memory energy expenditure and blood flow

Vitamin B7 :

Sources

Liver, yeast, bram of wheat or rice are very good sources. Cow milk is rather poor in niacin.

Pellagra

Deficiency of niacin leads to pellagra in the earlier parts of 20th century affected millions of people in the southern areas of USA as well as latin American Countries. Pellagra was common in Italy, Rumania and Rajasthan of India. It is even now see in Africa and telangana of India poor people living chiefly on maize are the usual victims of pellagra. After Goldberger discovered the international between niacin and pellagra and subsequently produced experimental lesions in dog. Niacin came to be known as pellagra preventive factors.

Signs and symptoms

Signs and symptoms of pellagra are popularly described by three D's i.e DD and D. They stand for (i)dermatitis (the word pellagra means rough skin) (ii)diarrhoea and(iii)dementia. If not treated the fourth D (iv)death supervenes. There are usually some other signs which are due to deficiency of other vitamins.

Mild degree deficiency produces sub clinical pellagra characterised by mental irritability burning sensation of the feet and hands and gastrointestinal disorder. it is possible windows complaining of burning sensation of hands and feet are really victims of subclinical pellagra

VITAMIN B12 DEFICIENCY:

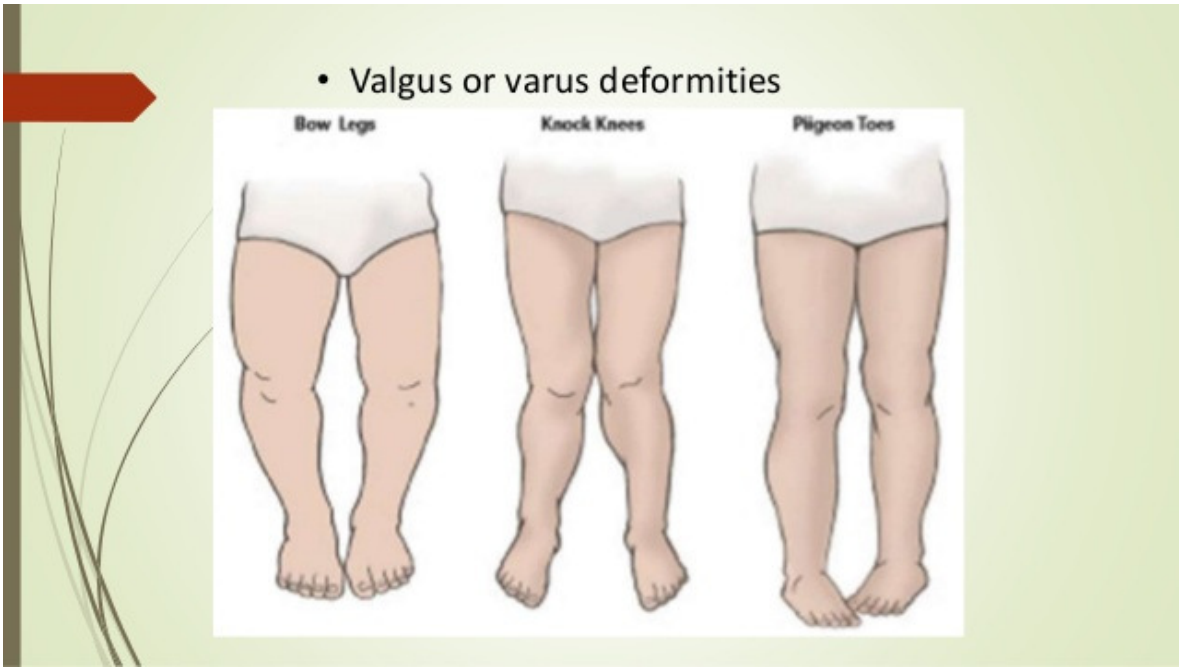
Cause

Deficiency occurs in pure vegetarians who do not take milk or milk products.

SYMPTOMS:

- ***Causes pernicious anaemia***
- ***Decreased of RBC count***
- ***Decreased haemoglobin content in blood.***
- ***Soreness and inflammation of tongue***
- ***Loss of sensation in fingers.***
- ***Deformity of spinal cord.***

Edema, weakness, insomnia, and may lose voice



VITAMIN D DEFICINECY

Vitamin D is a fat soluble vitamin which helps in absorption of calcium and phosphorous. Deficiency occurs due to inadequate exposure to sunlight, inadequate intake, altered metabolism due to liver and kidney damage.

Signs and symptoms

Rickets:

It is common in economically poor countries. The manifestation of rickets are seen most frequently toward the end of the first year and during the second year of life.

In rickets the child's bone get deformed

- ***Enlargement of ends of long bones***
- ***Bending of legs knock knee***
- ***Sunken chest rickety rosary chest***
- ***Beading of ribs and bones.***
- ***The child to be constipated.***
- ***Early rickets causes nervousness and irritability.***

PREVENTION:

Encourage outdoor playing for children (sunlight)

Dietary supplementation with adequate amounts of vitamin D.

IRON DEFICIENCY)

This a most common form anaemia throughout the world affecting mainly women in their reproductive years infants and children

CAUSES:

Infants and children suffer from iron deficiency anaemia due to premature birth and also due to iron deficiency in mother and prolonged breast feeding.

- ***Inadequate utilisation of iron.***
- ***Less spaced pregnancies, resurgence of malaria***
- ***Deficiency of iron in the diet during periods of accelerated demand like infancy***
- ***Inadequate absorption of iron can occur in diarrhoea.***

SYMPTOMS

Defects arise in structure and function epithelial tissues especially of the tongue nails mouth and stomach.

Skin appears pale and inside the eye lid may be light pink instead of red.

Fingernails become thin and flat and eventually koilonychia (spoon shaped nails)

The general symptoms are

- ***Lassitude fatigue***
- ***Breathlessness on exertion***
- ***Palpitations***
- ***Dizziness***
- ***Tinnitus headache***
- ***Dimness of vision***
- ***Insomnia***
- ***Paresthesia in fingers and toes***

- ***Angina.***
- ***Pica temper***
- ***Tantrum***
- ***Breath holding spells by children***
- ***Abnormal cognitive development in children.***

PREVENTION

Give the child a diet with iron rich foods such as iron fortified breads and iron fortified cereals and lean meat.

Foods that are a good source of iron are:

1) ***Liver***
2) ***Lean red meats, including beef, pork, lamb***
3) ***Sea foods***
4) ***Beans, cereals, green leafy vegetables, banana, mango, spices like jeera.***
5) ***Nuts, dry fruits, such as raisins, dates, apricots and egg yolk.***

SUMMARY

Deficiency of one or two nutrients in diet is called nutritional deficiency. Generally it is expressed as malnutrition. Nutrition is a major factor in bringing out the maximum potentially that one isendowed with both physically and mentally. Good nutrition depends on an adequate food supply and food distribution.

The social economic, cultural and agricultural factors are the basic causes of nutritional diseases. Some of the common nutritional deficiency diseases observed in children are protein energy malnutrition, kwashiorkor, nutritional marasmus, Vitamin A deficiency, vitamin B deficiency, vitamin C deficiency vitamin D deficiency, and iron deficiency.

Nutrients	*Source*	*deficiency*
Energy, protein	*Fat, sugar, cereals, egg, meat*	*Marasmus, kwashikor*
Calcium	*Milk and vegetables*	*Rickets, tetany osteomalacia*
Iron	*Liver, green leafy vegetables, jiggery*	*Anemia*
Vitamin A	*Carrot, liver, egg yolk*	*Night blindness*
Thiamin	*Yeast, pulses, nuts*	*Pain and weakness*
Niacin	*Groundnuts, whole cereals, pulses*	*Dementia, diarrhoea, dermatitis*
Vitamin B6	*Meat, liver, vegetables*	*Anemia and angular stomatitcs*
Folic acid	*Green vegetables, cluster beans*	*Megaloblastic anemia*
Vitamin B12	*Yeast, fermented foods*	*Pernicious anemia*
Vitamin C	*Citrus fruits, amla, guava*	*Bleeding gums*
Vitamin D	*Egg, sunlight, meat*	*Rickets, osteomalacia.*

Short answer type question

1) ***Write a note on PEM.***
2) ***Write the meaning of nutritional deficiency disease?***
3) ***Write on anaemia?***
4) ***Briefly write on Rickets?***
5) ***Give details on foods rich vitamin A and vitamin C?***

Long answer type questions

1) ***Explain the symptoms causes and prevention of PEM, kwashiorkor and marasmus?***
2) ***Write on the B complex deficiency disease, their symptoms, causes and prevention?***
3) ***Describe the symptoms, causes and prevention of vitamin A and vitamin C deficiency disease?***

Unit- 5

Common ailments in children

Structure

5.1 Introduction

5.2 Common ailments in children

Learning objectives

By the end of the unit student will be able to :

Know the common ailments seen in children.

Understand the symptoms and causes of the common ailments.

Care to be taken during the time when an ailment is observed in the children

Learn the precautions for treating a sick child.

understand problems in teething.

5.1 Introduction

Being sick is part of childhood and caring for a sick child is part of being a parent. They are prone to illness more than adults as their immune systems are still developing. Knowing the signs and symptoms can help them to right treatment early. Ensuring a child for balanced and varied diet will keep them healthy and boost their immune system.

Ailment can be defined as an often persistent bodily disorder or a disease.

5.2 Common ailments in children :

Some of the ailments which are observed in children commonly are discussed as follows .

1) ***Red sore buttocks.***
2) ***Constipation.***
3) ***Diarrhoea.***
4) ***Ear ache .***
5) ***Cold and cough .***
6) ***Fever.***
7) ***Vomiting.***
8) ***Colic.***

1) ***Red sore buttocks:***

The ailment is commonly seen in infants (especially of children below 1 year.) This may be due to infections of bacterial origin or fungal infections. These fungal infections mainly occur due to moisture on the buttocks ,lack of adequate cleanliness of the buttocks and malnutrition or may be due to vitamin deficiency also.

Causes:

- ***Soreness of buttocks can be both external and internal.***
- ***Contact with urine and faeces, prolonged exposure to urine and faeces can irritate the skin. Digestive enzymes in faeces can increase the risk of diaper rash.***
- ***Tight fitting diapers that chafe the skin can cause diaper rash.***
- ***Infants and children with preexisting skin conditions such as eczema and atopic.***
- ***Infections.***
- ***Contact with irritating chemicals.***
- ***Allergy to diaper elastic chemicals.***
- ***Using antibiotics.***

Symptoms

- ***Redness on the skin with shiny patches and some pimply spots.***
- ***Infants are irritable cry during diaper change.***
- ***Rash in found in diaper area usually in the buttocks, upper thighs and genitalia.***

Prevention

- ***Zinc oxide and petroleum jelly can be used.***
- ***Avoid using products that irritate the skin such as fragrances or lanolin.***
- ***Changing diaper often.***
- ***Cleaning skin gently and keeping it dry.***
- ***Rinse the baby bottom with warm water and unscented soap after each diaper change.***
- ***Use diapers that draw moisture away from the skin.***

Treatment:

- ***Protein diet with sufficient vitamins and minerals.***
- ***Bed rest, ointments for external applications are needed.***
- ***Personal hygiene is very important.***
-

2.) Constipation:

The condition when the waste matter in the bowel is too hard to pass easily is known as constipation. Different children have different bowel habits. Each child according to his individual body make up, his diet, his exercise, his eating habits, his intake of fluids, and so on develops a pattern of bowel movement.

Symptoms:

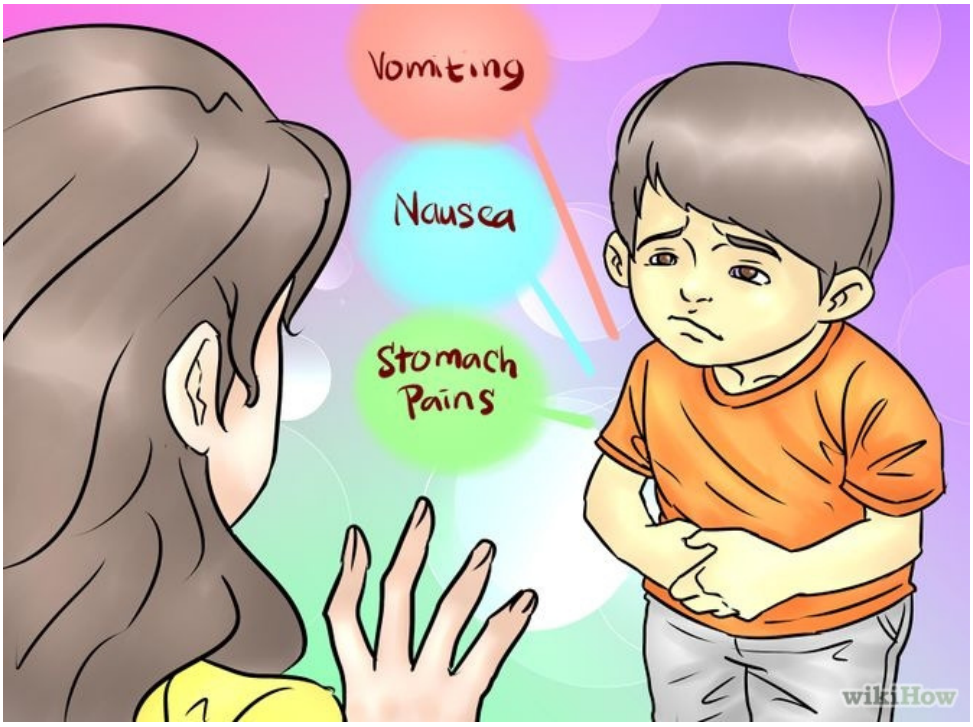
- ***Hard stools***
- ***Irregularity in bowel movement***
- ***Abdominal pain***
- ***Loss of appetite***
- ***Vomiting***
- ***Failure to gain weight***
- ***Urinary infections***

Causes of constipation:

- ➢ ***Irregularity in elimination habits.***
- ➢ ***Irregularity in eating habits.***
- ➢ ***Non availability of food according to the child need.***
- ➢ ***Absence of green leafy vegetables in food***
- ➢ ***Any type of sickness.***
- ➢ ***Insufficient physical activity***
- ➢ ***Emotional disturbance.***

Treatment:

- ➢ ***Elimination habits should be made regular***
- ➢ ***The child should given water and fruit juice.***
- ➢ ***A sufficient amount of roughage should be included specially leafy vegetables and whole grains cereals in the diet.***
- ➢ ***The child should be encouraged to do extra physical as they are habit forming.***
- ➢ ***The doctor should be consulted for a chronic condition.***



3.) Diarrhoea:

Diarrhoeal diseases rank among the most leading causes of children's death in developing countries.

Diarrhoea means increased frequency of loose stools. It is a water borne disease . Sometimes there is blood and mucous in these stools or the stools may be green in colour. Stools become green if they are passed so quickly that the green bile does not have time to become brown. Diarrhoea with blood and mucous is named as dysentery.

Causes of diarrhoea

- ***It is most frequent under the age of 2 years with peak incidence between 6-9 months***
- ***More common in summer months with maximum frequency in rainy season.***
- ***Children from poor families***
- ***Poorly nourished children***
- ***More common in artificially fed infants than breast fed***
- ***Improper feeding***

- ***Due to bacterial or virus infection.***
- ***Dirty water and poor sanitation***
- ***Unhygienic living conditions***
- ***Malnutrition***
- ***Faulty eating habits***
- ***Allergies.***

Treatment

➢ ***The diarrhoea patient should be given full rest .***

➢ ***The patient with acute diarrhoea should be kept on a liquid diet consisting of barley water,whey water , butter milk , pomegranate juice, lemon juice, rice kanji with salt.***

➢ ***Avoid laxative fruits like papaya, mango, guava etc. And green leafy vegetables.***

➢ ***If the cause of diarrhoea is food –poisoning then an anaemia should be given to clean his intestine , so that infected food is not left in the intestine.***

➢ ***The traditional practice of not giving any food to a person having diarrhoea should be given up .intake of fluid and continued feeding should be normal .***

➢ ***To compensate dehydration , the child should be given an extra amount of water . Home –made electrol water –by mixing sugar , a pinch of salt in a glass of boiled and cooled water should be given at small intervals.***

➢ ***In severe diarrhoea the doctor should be consulted immediately.***

4.) Ear ache:

Ear infections are common in small children and can lead to serious complication and loss of hearing. It has many causes including ear infections(otitis media) swimmers ear infection(skinin the ear canal) pressure from cold or sinus infection, teeth pain radiating to other up to jaw to ear and others.

Although there are many possible causes the chief one is bacterial infection in the middle ear.

Mothers clean ear with all sorts of things which may damage the ear canal and even children are found of putting small things in the ear.

Causes:

Ear infections can be caused by bacteria or a virus. When fluid accumulate behinds baby eardrum and become infected. This fluids flows through eustachian tubes which middle ear to back of nose and throat. But if the tube is block the fluid gets trapped in middle ear which leads to acute otitis media(AOM).

Symptoms:

- ***Irritability***
- ***Pulling or bathing at ear***
- ***Loss of appetite***
- ***Trouble sleeping***
- ***Fever***
- ***Fluid oozing from ear***
- ***Dizziness.***

Treatment

Most ear infections clear on their own but serve causes need to be treated with antibiotics.

Keep the child away from tobacco smoke.

Bed rest and plenty of fluids should be given ear should be cleaned with hydrogen peroxide frequently

Prevention:

- ***Breast feeding.***
- ***Avoid smoke.***
- ***Proper bottle position.***
- ***Healthy environment.***

Home remedies:

Warm compress warm moist compress over the child ear for about 15 minutes which reduce pain

Warm oil olive oil or sesame oil can be put in affected ear

Give lot of fluids,Swallowing helps to drain the trapped fluid.

Elevate child's head

Cold and cough:

It is believed that 50 or more different viruses can cause the symptoms known as "the common cold" sore throat , stuffy and runny nose, sneezing, coughing and watery eyes. A high fever is not a normal symptom of cold.

Colds are caught by transfer of the virus from the nose and mouth discharge of an infected child. The transfer may be through direct contact through droplets released in sneezing, coughing or talking or indirectly through contact with eating in utensils or other article of the infected child

There is no cure for a cold so far. All we can do is to make the child comfortable.

Symptoms:

- ***Congested or runny noise***
- ***Fever***
- ***Sneezing***
- ***Coughing***
- ***Decreased appetite***
- ***Irritability***
- ***Difficulty in sleeping***

Treatment:

- ***No quick cure for a cold***
- ***Get well within a week***
- ***Child should be kept warm, have rest and given plenty to drink***
- ***Nose should be frequently wiped clean***
- ***Sitting position makes breathing easier.***
- ***Breast feeding to be continued***

Prevention:

- ***Children with cold should be isolated from other children***
- ***Good food and lots of fruits.***
- ***Care to be taken to prevent complications***

Cough

Cough is usually a sign in child body is trying to rid itself of an irritant from mucus to a foreign object. It is a symptom of a respiratory infection but it may be caused by other respiratory diseases like asthma. Coughing is an important reflex because it removes like extra mucus and let air pass through wind pipe and into the lungs which help the child to breathe.

A child cough is often worse when the child is lying in bed because the mucus can collect in the back of the throat

Symptoms:

- ***Fever***
- ***Runny nose***
- ***Difficulty in breathing***

Treatment

- ***Provide comfortable bed to take rest***
- ***Bedding and bed clothes must be clean***
- ***Cover if the air is cool***
- ***Change positions frequently to prevent bed sores and pneumonia***
- ***Encourage to drink plenty of oral fluids***
- ***Check temperature every 4^{th} hourly***
- ***Cold sponging according to the temperature***

Fever:

When a person body temperature is above normal it is called fever. Fever itself is not a sickness but is a sign of many different sickness. Infections and communicable diseases often cause the body to react with fever.

If the patient feels hot he can be checked by using thermometer. The normal temperature is 37 c(98.4f) if it is above 37.2c(99f) the person has fever

Symptoms:

- ***Skin feels hot and dry and the mouth is dry***
- ***Furred tongue, lack of appetite,nausea, vomiting constipation***
- ***Less urine is passed and it is highly concentarated***
- ***Pulse and respiration rates are usually increased and the pulse may feel very strong.***
- ***Head ache and body aches***

- ***Restlessness, delirium and convulsion***
- ***Pulse rate for babies (100 – 140 per minutes) and for children(80-100 per minutes)***
- ***Sore throat cough and ear ache***

They are three types of fever :

1) Continuous fever:

Constant or continuous fever when temperature remains high and varies not more than 2F between night and morning

Example :

Lobar pneumonia , typhoid etc,

Intermittent fever :

The temperature varies from normal or subnormal to high fever and back at regular intervals

Example :

Malaria

Remittent fever :

Temperature varies more than 2F between the morning and evening but does not come down to normal

Example:

Septicemia

4.) Relapsing fever:

It is one in which periods of fever are followed by one or two days of normal temperature

Prevention:

- ***Barely water, whey water, butter milk, pomegranate juice, lemon juice, rice kanji with salt***
- ***Avoid laxative fruits like papaya, mango, guava and green leafy vegetables.***
- ***If children have no nausea, vomiting or abdominal distention they should be encouraged to drink oral electrolyte solution.***

- ***Continue breast feeding during diarrhoea***
- ***Diet should be easily digestible and nutritionally balanced***
- ***Care of the skin at perineum and buttocks is important as it can cause irritation and reduces***
- ***General hygiene care should be provided***

Vomiting:

Vomiting means the expulsion of the contents of the upper gastrointestinal tract. Vomiting may be due to undigested food particles in the stomach some infections in the stomach food poisoning or ulcers of the stomach and duodenum

Causes:

1) Gas infections and chills may cause sour smelling vomiting after a meal.

2) In bottle fed babies it may indicate that the milk is either too much in quantity or not fresh.

3) With breast fed babies ,it may mean that the mother's milk contains something that is upsetting the baby.

4) Sometimes food allergy may be the cause for vomiting.

5) When the baby is not feeling well.

6) Sometimes an obstruction in the digestive track may make the child to vomit.

Treatment:

1) Drugs which stop vomiting are called antiemetics such as perinorm,avomin etc are to be used.

2) Rest to the patient and intravenous administration of fluids.

3) Gastric lavage, use of antibiotics if vomiting is due to infection.

Colic:

This usually occur in babies who are only a few weeks or months old. A baby with colic is apt to pull up her legs and arms, clench her fists, yell lustily turn red face , and expel gas all more or less simultaneously. But despite the baby's discomfort, this condition is not serious . The attack however occurs at the same time of the day particularly in the evening and hence it is sometimes called evening colic.

Causes

- ***Swallowing of air while feeding***
- ***Indigestion***
- ***Emotional tension on the part of the mother or baby***
- ***Artificially fed babies suffers more than those who are breast fed***
- ***Constipation or diarrhoea***
- ***Insufficient exercise and lack of activity of limbs and body.***

These are three types of colic

1) ***Intestinal colic: Is due to presence of worm infestations and undigested food material.***
2) ***Renal colic: It is a type of abdominal pain caused mby kidney stones***
3) ***Biliary colic: It is due to irritation of the viscera secondary to cholecystitis and gallstones.***

Symptoms:

- ***Fussing and crying***
- ***Facial discolouration such as reddening of the face or paler skin around the mouth***
- ***Bodily tension***

Treatment:

- ***Pain can be relived by keeping the baby in prone position***
- ***Burp him and give some water to drink***
- ***Mothers should be instructed about the correct feeding techniques***
- ***Do not permit the baby to nurse or eat too rapidly***
- ***Stop feeding at frequent intervals and let her burp***
- ***Change in baby diet***
- ***Child should be more relaxed and less stimulated***

Precautions for treating a sick child:

The following precautions should be taken in treating a sick child

- ***Bed rest, warmth,cleanliness of the body, plenty of fluids by mouth or by intravenous injections are to be given***
- ***Wash your and child hands frequently***
- ***In case of vomiting in children the child has to be hydrated giving bland food***
- ***Deworming must be done***
- ***If the sickness is severe hospitalisation of the patient must be done***
- ***Comforting the patient is essential***
- ***Observation is required for sinus and complications***
- ***Good food hygiene must be maintained***
- ***Isolation of the patient must be done in care of infections diseases like measles and chicken pox.***
- ***If child cannot go to sleep put him to sleep by reading a suitable story.***
- ***Analgesic drugs for pain and antispasmodic drugs are to be administered if there is any pain in the abdomen.***
- ***Anti diarrhoeal drugs for diarrhoea or dysentery may be administered.***
- ***If there is any food poisoning gastric lavage.***
- ***Follow the doctors or nurses instructions.***
- ***Encourage the child who has been ordered by the doctor.***

Teething:

Teething is the process by which an infant's first teeth ("baby teeth" or "milk teeth") sequentially appear by emerging through the gums

A child's first teeth are the twenty baby or deciduous , teeth which are eventually replaced by thirty-two permanent teeth . Both baby teeth and permanent teeth begin to develop before the child is born . Because of this it is vitally important that an

expectant mothers diet should be rich in calcium, phosphorous and vitamins, which are necessary for the health of the child's teeth.

Some babies are slower than other in cutting teeth, but the deciduous teeth generally appear between six and nine months of age. Usually all baby teeth have come through by the time the child is two – and – a- half years old.

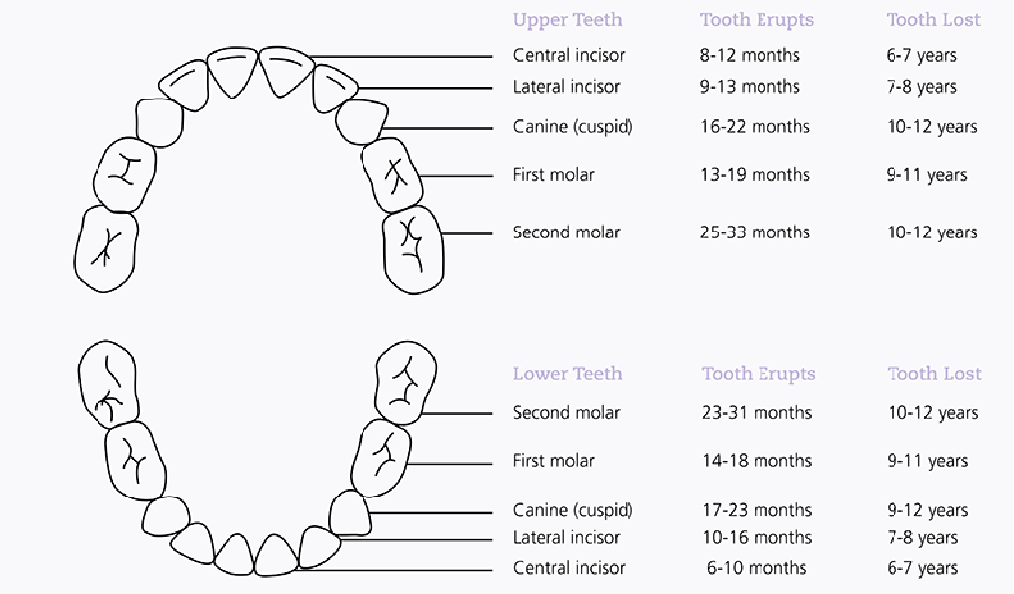
Teething

Teething is the process by which an infant 's first teeth "(baby teeth" or milk teeth") sequentially appear by emerging through the gums. Teething may starts as early as three months or as late as twelve months. The first teeth typically appear between six and nine months. It can take several years for all 20 teeth to complete the tooth eruption they typically arrive in pairs. Though the process of teething is sometimes referred to as cutting teeth, when teeth emerge through the gums they do not cut through the flesh. Instead special chemicals are released within the body that causes some cells in the gums to die and separate, allowing the teeth to come through. Teeth help us in digestion of food. They are used for aiding expression forming words during speech, making sounds and in many other ways

Sequence of appearance

Teeth start to form during the 3rd or 4th month of pregnancy but they erupt after 6th month or so after the birth of the child. The age at which babies cut their teeth has been found to be far less important than the sequence of eruption. The infant teeth tend to emerge in pairs- first one lower incisor emerges then the other lower incisor emerges before the next set begins to emerge. The general pattern of emergence is:

- ***Lower central incisors(2) at approximately 6 months***
- ***Upper central incisors(2)at approximately 8 months***
- ***Upper lateral incisors(2)at approximately 10 months***
- ***Lower lateral incisors (2) at approximately 10 months***
- ***First molars(4)at approximately 14 months***
- ***Canines (4) at approximately 18 months***
- ***Second molars(4)at approximately 2-3 years***



Milk teeth tend to emerge sooner in females than in males. The exact pattern and initial starting times of teething appear to be hereditary. When and how teeth appear in an infant has no bearing on the health of the child but the process of teething may cause a slightly elevated temperature, but rising into the feverish range. Higher temperatures during teething are due to some form of infection such as a herpes virus initial infection which is extremely widespread among the children of teething age.

Teething problems

As the primary teeth erupt in the process of occlusion takes place. Occlusion means the contact between maxillary and mandibular teeth which approach each other as occurs during chewing or rest. It helps to chew by moving jaw up and down side ways forward and backward. Malocclusion is misalignment of teeth and jaws or simply a bad bite. Which can cause lot of health and dental problems. If the teething takes place properly there is no chance of malocclusion and will have correct mastication of food without effecting general health. Irregular tooth position will retain food and will result in bacterial growth which leads to tooth decay and gums diseases

Teething may make the baby

- ***Mild fever***
- ***Irritability and fussiness***
- ***Child refuse feeds***
- ***Difficulty in sleeping***

- ***Excessive salivation***
- ***Finger and thumb sucking increases during teething***
- ***Rub their gums with various objects***
- ***Red and swollen gums, grabbing ears***
- ***Loose weight***
- ***Disturbed sleep***
- ***Get red patches on cheeks***
- ***Dribble due to increase in saliva***
- ***Child's teeth should be cleaned regularly and mouth should be rinsed well***

Symptoms:

The symptoms of teething are extremely mild. Babies lose immunity acquired from mother at about six months and coincidentally pick up new infection at the time of teething

- ***Sore and tender gums***
- ***Flushed cheeks***
- ***Excessive dribbling***
- ***Inflammation in the mouth***
- ***Excessive chewing***
- ***Restless sleep***

Summary

Sick days are part of being a kid worrying about childhood illness is part of being a parent .

Usually simple ailments do not require medical attention but they should not be neglected .

Some of the common ailments seen in children and red sores, cold, cough, fever, diarrhoea etc.

Young children also face problems during teething .

Bed rest, warmth , cleanliness of the body , plenty of fluids by mouth or by intravenous injection are to be given

Children feel bored, insecure and irritable when sick.

Sick children should be provided with love, company and sense of security,

Short answer type questions:

1. ***What is fever and how many types of fever are there?***
2. ***Describe the causes and treatment of constipation?***
3. ***Write on the sequence of appearance of teething?***

Long answer type question :

1. ***Explain any five common ailments observed in children including the symptoms, causes and treatment?***
2. ***Explain the precautions to be taken for treating a sick child?***
3. ***Write about teething and the complications or problems during teething?***

UNIT – 6

HABIT FORMATION

Structure

6.1 Introduction

Importance of habit formation – Eating habits, sleeping habits, toilet training, dressing.

Introduction

Man is often described as a creature of habits. Habits in relation to dressing, eating, work and other everyday activities are so readymade that most people unfold without thinking.

Childhood is the best time to practice and develop good habits. This is entirely due to the fact that children have a really good grasping power. They can easily learn what is told to them, and put them to use. In fact, a child's grasping power is approximately 25% more than an adult's grasping power. Therefore, it is easier to inculcate good habits in them whilst they are young and agile minded.

A child's mind is pure and innocent. He believes that his parents do everything for his own good. In order to inculcate good habits in them, their parents should show them the right way to behave at the right time, in a fun manner. This can be done by performing activities along with them, showing them both the good and the bad sides of acting in a certain manner, towards a particular situation.

Habit is the name given to behaviour which when repeated often becomes automatic. A habitual action is one which is performed with little or no thought and approximately always in same manner.
Characteristics of habits:

- ***They are acquired through repetition***
- ***They are semi mechanical and automatic that is they do not require any attention once they are acquired***
- ***They can be performed only under similar conditions***

Types of habits:

Habit may be divided into three group

Bodily habit

Habit of character and disposition

Habits of thought.

Bodily habits: Are the those habits which are connected with the way in which we use limbs, with such actions such as walking, speaking, washing the teeth, gaining proficiency in the use of bodily powers in activities such as games and exercises. Routine habits such as eating, sleeping, dressing, toilet training come under bodily habits

Habits of character and disposition: are habits such as obedience, telling the truth, hospitality, tolerance, tidiness and punctuality.

Habits of thoughts: Are the habits such as accuracy of thinking for oneself, seeking for reason and causes, correct observation and testing results.

6 .2 IMPORTANCE OF HABIT FORMATION

It has to be appreciated that habits that get formed before the child is just three or five years old tend to become life habits. If the child gets on to good habits it repeats the same when he or she grows old so also with bad habit.

Mother has a big role in formationof good habits. When a good habit is formed it starts bringing harmony to others. When parents and teacher are good role models, good habits get formed very quickly.

A change in bad habits leads to a change in life. Children learn from the influences around them. It is essential to encourage good habits of children in their early years. The habits learnt in this phase will stay with him for the rest of his life. Habits are formed by doing and children learn by doing. Habits give satisfaction to the child.

- ***Habits reduce fatigue***
- ***They make movements and tasks simple***
- ***Through habit formation it is possible to do many things at a time.***
- ***Habit saves individual time and thought.***
- ***At times habits can cause danger***
- ***Habits make things accurate***

- ***Habits endure greater speed***
- ***Habits can be both good and bad habits***
- ***Bad habits are thumb sucking, nail bitting, lying down and reading etc***
- ***Bad habits are difficult to get rid off***
- ***Habits kill feelings and make us in different.***

There is a statement that "personality is clothed in habits". Habits are the very garment of the soul. The ability to form habits is the most striking and most useful characteristic of man whether is an infant adolescent or a old man. A child when he first begins to go to school he takes lot of time to dress up especially to lace his shoes but after some days he is able to do quickly and easily.

The aim of all education both at home and school should be to inculcate the right habits

HOW HABITS DEVELOP:

The cultivation of habits should begin very early in life. The younger the child the more receptive his mind will be able to acquire the right habits.

Habits are formed by frequent repetitions and it also takes quite a long time to acquire habits. For proper habit formation we must start with a strong emotional stimulus.In the formation of a new habit there should be no exceptions and the actions should be persistently performed without a break.

Formation of good habits among children should be rewarded by giving gifts and praising children. Habits give some satisfaction to the child. Occasionally approval is the best form of giving satisfaction to the child while he is learning

10 WAYS TO DEVELOP GOOD HABITS IN CHILDREN

- ***Keep things positive.***
- ***Be realistic with your expectation.***
- ***Encourage family bonding.***
- ***Set strong ground rules.***
- ***Introduce healthy food habits.***
- ***Reward your child.***
- ***Encourage physical activity.***
- ***Family dinners.***
- ***Introduce good literature.***
- ***Good manners – an early start.***

BREAKING OF BAD HABITS:

Everybody has a few or more un desirable habits. Hence habit breaking is very important. If reinforcement is withdrawn from a habit it becomes weak and finally disappears. Punishment is another method to break a bad habit. There are many methods to break habits.

1) ***Substitution method: In this method one tries to prevent an undesirable habit by replacing it with another response.***
2) ***Toleration method: It consists of gradual substitution of an undesirable habit with a desirable one. This method is effective in treating fear.***
3) ***Change of- Cue method: One of most widely practised and in many cases least effective methods of breaking an undesirable habit is to remove the organism from the situation where the habit is developed and to place him in an entirely new one***
4) ***Maturation and habit breaking: The importance of maturation in eliminating many undesirable responses should never be overlooked. The teacher who gives her three years old child a crayon and a 12 by 12 inch piece of paper to keep him busy can expect him to extend his creative masterpiece beyond the edges of the paper onto the table. The child has notreally misbehaved. A three year old child naturally***

makes large gross motions when he moves his hands. Training a three year old within the confines of a 12 x 12 inch piece of paper is difficult because his neural and muscular organisation has not matured sufficiently to enable him to confine his drawing to a small piece of paper

EATING HABITs:

Most of the problems of food acceptance begin in the toddler stage.The problem starts with the mother,who thinks that the child should be well fed, and tries to feed the child more food than it needs.The child will show a marked decreases in appetite in the second year, because he grows in slower rate in the second year as compared to the first year. So it is important to give small portions of food and let him enjoy it. Allow the child some freedom to decide when he is satisfied. Allow some flexibility in choices and help the child form good food habits gradually. As long as the child seems fit, healthy and active and is growing well it is obvious that he is receiving enough nourishment.

Points to remember:

1)The child should be taught to wash his hands before and after the meal properly.

2)Encourage the child to eat slowly.

3)Discourage eating meals or snacks while watching TV.

4)The child should have his meal at regular intervals.

5)Try not to use food to punish or reward the child.

6) Eat meals together as a family as often as possible.

7)The meal should look attractive and meet nutritive needs of the child.

8)Encourage the child to drink more water.

9) Be a good role model.

10) Keep offering new foods

11) They must be encouraged to feed himself without spilling

12) The child should always have a clean place, a small and comfortable chair and table.

	CLEAN UP PLAYROOM
	PUT ON PAJAMAS
	GO POTTY
	BRUSH TEETH
	READ A STORY OR TWO
	SAY GOODNIGHT!
	LIGHTS OUT!

SLEEPING HABITS

Sleep is important at all ages. Sleep problems are common among infants and toddlers, affecting both the child and the parents. Sleep habits are easily established in early infancy, will be maintained only if the baby continues to get satisfaction out of them. The child learns to associate going to sleep with pleasant feeling of the food, warmness in the bed and sleepiness he had after his feeding or meals.

How much sleep a child needs each day depends on age. Newborns sleep about 16 to 20 hours and are awake about 1 to 2 hours between periods of sleep. Infants sleep about 13 to 15 hours including nighttime sleep, morning naps and afternoon naps. Toddlers sleep about 12 hours including an afternoon nap.

By establishing regular hours for his rest and sleep, contributes for the child's well being. Many schools arrange for periods of rest on mats or cots.

PIONTS TO REMEMBERED IN SLEEPING HABITS

1. ***The baby should not be put to bed when hungry.***
2. ***Child should put to sleep when he is sleepy.***
3. ***Have a nighttime routine and a regular sleep schedule.***

- ***Set a bedtime for your child. Be sure to stick with the time you select by putting your baby to bed at the same time every night.***
- ***Start a night time routine that includes feeding, bath, bedtime story, etc.***

4. ***Do not let your child nap for too long or too late in the day.***
5. ***Do not put your child in bed with a bottle or cup. Sleeping with milk or juice in the mouth can lead to cavities and tooth decay.***
6. ***Consider offering a pacifier at nap time and bedtime.***
7. ***Children should be helped to go to toilet before going to bed.***
8. ***Activities which drags child`s excitement should be avoided.***
9. ***It is preferable to discourage the habit of sleeping only when rocked or patted***

Toilet training

There is a wide spread belief that good health is acquired through regular bowel and bladder movement. The toilet training includes the training of bowel and bladder movements.

Baby potty training is the practice of introducing the baby to the toilet or potty before his first birthday.

Babies aren't physically or emotionally ready to be toilet trained in the way we usually understand the term until they are between 18 months and three years old. They develop the ability to control their bladders between 18 months and two years.

The time to begin toilet training depends on the child. He can perform this task when he is physiologically and psychologically mature.

Toilet training should begin at 18 months at that time the child is ready he can sit on the potty without any support. The important factor is the comfortableness of the bowel movement. The

baby who have painful hard movement will naturally fear to go to toilet seat which may leads to constipation.

All children become toilet trained by the time they are 3 years of age. Usually bowel control comes first and then bladder control is achieved.

Points to be remembered:

1) ***Toilet training should be child oriented.***
2) ***Potty should be attractive and comfortable.***
3) ***Do not flush the toilet when the child is in. It may frighten him both by the noise and by the fact the part of his is being taken away.***
4) ***Praise your child and treat his control as an accomplishment.***
5) ***Do not delay once the child has signalled his need since control is only possible for a short time.***
6) ***Any accidents if occurred should always be ignored and forgiven.***

7) Parents should have patience while training the child. Do not expect perfection immediately.

8) Good toilet habits should be inculcated.

DRESSING HABITS:

The time between 1 ½ and 2 ½ years is the most important for learning self dressing skills. This is the time when babies are very eager to learn to dress themselves. Undressing comes before putting on clothes because it is easier.

There are few ways to make learning self dressing skills easier

- ***Clothes should be chosen that have aids to self dressing in mind zippers for example can be used instead of buttons. Front opening is preferable***
- ***Parents can help with the dressing taking over the hard parts etc. Until the major tasks are mastered.***

It's important to let your toddler have a go at doing as much as she can as she grows. Dressing and undressing helps her to coordinate her arms and legs better. And trying to put on clothes also helps her to learn about using her fingers for those fiddly tasks (Herts NHS 2011).

It'll be a slow process, but from around 12 months old, the toddler may start to show an interest in helping to get her dressed. But however determined she becomes to do things for herself, she'll need your help for a long time yet. At this stage, she may just hold out her arm for a sleeve and a foot for a shoe (British Association for Early Childhood Education 2012: 25, Sheridan 2008: 24).

By 18 months old, your toddler may be able to pull off her shoes, socks, and hat (Sheridan 2008: 35, Thomson Delmar Learning 2007). But she will still struggle to put them back on herself (Sheridan 2008: 31). She isn't likely to be able to put on her shoes, socks, and hat until she is about two years old (Sheridan 2008: 35).

Between the ages of two years old and three years old, your toddler may learn how to pull down the zip on a jacket and pull on a hat (British Association for Early Childhood Education 2012: 26, Thomson Delmar Learning 2007). But she probably won't be able to get dressed by herself until she is about four years old. And even then, she'll probably still struggle with zips, laces, ties, and back buttons, and will need your help (Sheridan 2008: 46).
Girls tend to learn how to dress themselves earlier than boys. But this is a very general rule and can vary a great deal (Einon 2006: 166).

Undressing before bed and helping to put on pyjamas is a good time to start practicing. You may have more time to allow the child to practice in the evening than in the morning (Herts NHS 2011).

Take the same approach for each item of clothing. For example, always help the toddler to put her top on in the same way. Pull the top over her head first, and then put her arms through the sleeves (Herts NHS 2011).

Let the toddler do as much or as little as she can by herself. If she struggles, encourage her to keep trying by leaving a last small step for her to finish. For example, pulling off a sock you've already tugged down a little, or pulling up her trousers from just below the waist (British Association for Early Childhood Education 2012: 26). Be patient and tell her how well she's doing every time.

Arrange the toddler's clothes on the back of a chair in the order that they need to be put on. Put socks and shoes underneath the chair. The toddler can then keep returning to the chair for the next layer.

From around 18 months old, the toddler may enjoy dressing up. It's a great way for her to practise getting dressed and undressed.

Practice makes perfect, so encourage the toddler to hone her dressing skills on a special toy with buttons, zips, and laces. These will help her to master the tricky art of fastenings. It's best not to use tiny doll clothes, though. These are too intricate for toddlers and will only lead to tears of frustration.

SUMMARY

Habits form the foundation of an individual's personality. We are defined by our habits everywhere we go. Hence, in order to establish good reputation in the society, it is very important to develop good habits.
When a good habit is formed it starts bringing harmony to others. When parents and teacher are good role models, good habits get formed very quickly.

A change in bad habits leads to a change in life. Children learn from the influenced around them. It is essential to encourage good habits of children in their early years. The habits learnt in this phase will stay with him for the rest of his life.

Help the child develop healthy habits early in life that will bring lifelong benefits.
The different habits that the child learns are eating, dressing, toilet training
Short answer type question

1) ***Define habit?***
2) ***Write about importance of habit formation?***
3) ***What are advantages and disadvantage of habit***

Long answer type question

1) ***What are the points to be kept in mind while developing good habit?***
2) ***Write about eating habits in children?***
3) ***Write about sleeping habits in children?***
4) ***Write about toilet training habits in children?***
5) ***Write about dressing habits in children?***