HEALTH & DISEASE

INTRODUCTION

The world health organization (WHO) defines health as follows. **"Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity".** The body of a healthy person can adapt easily to changes in living conditions, weather, etc. It also takes stress well. A healthy person can enjoy life to the fullest.

Basic conditions for good health

The health of an individual and that of the community are closely linked and for good health, the actions of an individual are as important as those of the other members of his community, the civic services, the industries, the industries around him, etc. Let us examine the basic conditions necessary for the health of an individual and a community.

- **Balanced diet :** A balanced diet is the first conditions necessary for good health. A balanced diet is one that provides all the nutrients required by the body in correct proportions. The nutrients required by our body are proteins, carbohydrates, fats, vitamins and minerals. When our diet lacks one or more of these nutrients, we get deficiency diseases. For example, if our diet lacks the mineral iron, we may get a disease called anaemia. A balanced diet prevents deficiency diseases. It also increases our ability to fight infections in general.
- **Personal hygiene :** Personal hygiene is extremely important for good health. We should bathe regularly and we clean clothes. Bad odour associated with dirty clothes and unwashed bodies is caused by microoganisms acting on perspiration. Not brushing our teeth regularly and after meals can cause pyorrhea, a disease in which pus forms in the gums. Clipping nails and keeping them clean, washing our hands with soap before meals and after a visit to the toilet are all essential for good health.
- **Clean surroundings :** Our health depends on the cleanliness of our surroundings. Flies and mosquitoes carry germs that cause diseases. Flies breed in rotting garbage and mosquitoes breed in pools of stagnant water. So, people fall ill quite often if the area in which they live or work has uncleaned garbage, pools of stagnant water or open drains.
- **Clean food and water :** Disease-causing organisms and chemicals can easily enter our bodies through the food we eat and the water we drink. Fruit, vegetables and foodgrains may be coated with pesticides and they may carry germs, insects and eggs of worms. Therefore, these should be thoroughly washed before cooking or eating. Cooked food should be kept in clean, covered untensils. Water carries a number of disease-causing organisms. Therefore, it is best to treat water to make it safe for drinking.
- **Clean air :** Clean air is a basic requirement for good health. Breathing polluted air causes respiratory diseases such as asthma and bronchitis. Although it is the government's job to ensure that industries do not pollute the air, we can also take certain steps to ensure that the air we breathe is clean and fresh. Our homes should be well ventilated. Special attention should be paid to the kitchen to ensure that the fumes generated while cooking are quickly removed. For this, an exhaust fan can be used.

- **Exercise and relaxation :** Regular exercise keeps us fit. People who exercise regularly are less prone to heart attacks and strokes. Exercise keeps body weight under control. It promotes digestion and is helpful for good night's sleep.

  Exercise can be in many forms. One can choose between walking, jogging, bicycling, yoga, aerobics or sports according to one's age, health and personal preference.

  Relaxation and sleep are equally important for physical and mental health. They help in resting and recharging our bodies. They also reduce stress. We should have regular sleeping hours. We can relax by listening to music, strolling in a park, playing a game, reading and so on.

- **No addictions :** Generally, when we talk about addiction, we mean the habit of smoking, drinking or taking drugs. An addiction causes health problems., Drinking alcohol reduces mental and physical alertness. And excessive use of alcohol may affect the nervous system and damage the liver. Smoking causes respiratory and heart diseases, and cancer. Chewing tobacco and cause oral cancer and dental problems. Drugs like heroin, cocaine and hashish affect the nervous system. For good health, we should say no to all addictive substances.

- **Good economic conditions :** People who are poor cannot afford many of the things required for good health. For example they may not be able to afford a balanced diet. Many of them live in overcrowded. Unhygienic areas. They may also not have access to clean drinking water. It has been found that areas and countries where the economics conditions are good, people do not usually suffer from certain diseases like malaria and cholera.

Diseases

A disease is an abnormal conditions of the body which does not let and body function properly. For example, arthritis is a disease of the joints which affects the elderly. People with arthritis may find it difficult to move their fingers or bend their legs. Influenza (flu), typhoid, common cold and malaria are some other disease.

Sometimes a part of the body is unable to function properly because of an injury. Such a conditions is not a disease. For example, a person with a fractured bone in the leg will not be able to move it. But a fracture is not a disease.

Signs and Symptoms of Disease

When we suffer from a disease. We feel unwell because some part of the body is not working normally. This is an indication of a disease and is called a symptom. A symptom is a change in normal functioning of the body which is felt by a patient, but which cannot be observed by the doctor. For example, stomach ache, sore throat and nausea are symptoms. A patient has to tell the doctor about these because the doctor cannot see or feel them.

Acute and Chronic diseases

A disease that occurs suddenly and lasts for a short time is called an acute disease. Common cold, influenza, malaria and cholera are examples of acute diseases. Once treated, these diseases generally do not have any long-term effect. For example, a patient suffering from influenza has fever, aches and other symptoms. These symptoms last for a few days only, and after the patient gets well, they disappear.

A disease that lasts for a long time is called a chronic disease. Some examples of chronic diseases are asthma, arthritis, tuberculosis and diabetes. Chronic diseases generally cannot be cured completely. Only their symptoms or effects can be controlled with medicines. Since chronic diseases last for long time, they have an ill effect on the health of a person. For example, the wounds of a person suffering from diabetes do not heal quickly. A tuberculosis patient loses weight and tires easily.

Chronic diseases are often related to unhealthy habits. For example, smoking or chewing tobacco can cause cancer. Age is also a factor in chronic diseases. Chronic diseases like arthritis are more common among the elderly.

Different Causes of Diseases

Broadly speaking, diseases can be caused by

(a) **internal or intrinsic factors,** i.e., factors within the body, and

(b) **external or extrinsic factors,** i.e., factors outside the body.

In some diseases, a defect in an organ or organ system causes them to stop functioning normally. The cause of such a disease is internal. For example, diabetes is caused by an internal factor-the malfunctioning of the pancreas. The pancreas stops producing the normal amount of insulin required to metabolize carbohydrates, which causes many problems.

In some diseases, an organ or organ system stops functioning normally due to an external factor. For instance, a diet deficient in iodine causes the thyroid gland to function abnormally. This causes a deficiency disease called goitre.

Fig. Case of Goitre.

Here, deficient diet is a external factor. Alcohol and tobacco are external factors that damage our organs and cause diseases. Air pollutants are external factors that cause the respiratory system to work abnormally. Apart from these, disease-causing organisms like bacteria, viruses, fungi and parasites are external factors. They causes diseases like cholera, influenza, polio and malaria.

Sometimes a number of things increase the changes of our getting a disease. For example, smoking and lack of exercise increase a persons; chances of getting heart disease. So smoking and lack of exercise are contributory causes of heart disease. In some diseases, dirty surroundings can also be a contributory cause. If our surroundings are dirty and have stagnant pools of water, mosquitoes will breed in them. These mosquitoes may carry organisms that cause diseases like malaria. Thus, dirty surroundings are a contributory cause of malaria. And the organism that actually causes malaria is called its immediate cause.

Infectious Diseases

Diseases, as you know, have different causes. Some diseases result from an infection. What does 'infection' mean ? **The entry and multiplications of a disease-causing organism in the body is called infection**.

Disease-causing organisms are called **infection agents or pathogens**. They include bacteria, viruses, fungi, protozoan parasites and worms. These organisms can enter the body in different ways such as with food, water, air, etc. Then they live and multiply in the body of the infected individual. The organism in which an infectious agent lives and multiplies is called its host.

The presence of an infectious agent may affect the normal body function of the individual,, leading to a disease. A disease caused by an infectious agent is called an infectious disease. You can also say that a disease resulting from an infection is called an infectious disease. Cholera, influenza, pneumonia, tuberculosis, AIDS, malaria and filaria are examples of infectious diseases.

- **Noninfectious disease :** A disease that is not caused by an infectious agent is called a noninfectious disease. Disease like diabetes, cancer, anaemia and arthritis are noninfectious.
- **Communicable disease :** An infectious diseases that can be spread from one infected individual to another is called a communicable disease. An infectious disease can be spread from an infected person to a healthy person in many ways such as through food, water, air, direct contact, through a disease carrier like a mosquito, etc.

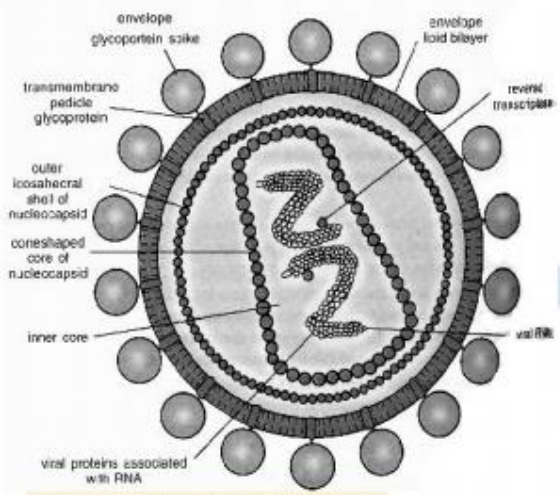

Fig. HIV (Virus)

Some infectious diseases are not communicable. For example, tetanus is an infectious disease which affects the nerves are not communicable. For example, tetanus is an infectious disease which affects the nerves and muscles of the patient. It is caused by bacterium which enters the body when a wound comes in contact with contaminated soil or animal wastes. But tetanus cannot be spread from person. So, it is not a communicable disease.

Spread of communicable diseases

A communicable disease can spread, or get transmitted, in many ways. It is important to know how they spread because it can help in controlling these diseases.

- **Through air :** Some diseases that are caused by bacteria or virus can be spread through air. Such diseases are called airborne diseases.
- **Through food and water :** Infectious diseases of the intestines and stomach can spread trough contaminated food and water.
- **Through contact :** Many diseases are spread when our skin comes in contact with an infected person, especially if our skin is broken due to a wound, scratch, etc. Diseases like scabies, herpes, ringworm (a fungal infection) and some types of anthrax can be spread in this way.
- **Through body fluids :** Some diseases can be spread through blood, semen or mother's milk. AIDS and hepatitis B can be spread by these body fluids. For example, they can be spread by sharing injection needles or by the transfusion of infected blood.
- **Through vectors :** Animals like mosquitoes, flies, cockroaches and rats spread many diseases. An animal that spreads a disease is called a vector. Mosquitoes of different species are vectors for diseases like malaria, dengue, yellow fever and filariasis.
- **Antibiotics :** Antibiotics are drugs used to curve diseases caused by bacteria. There are different kinds of antibiotics which attack different processes and structures in bacteria to kill them or to stop their growth.

Immunization

Immunication is stimulating the body to produce antibodies by artificial means. These antibodies fight against infections later. You can be immunized against certain diseases by taking vaccines for them. A vaccine is a preparation of weakened-infections agent or their products that can be injected or given orally to prevent specific diseases. Vaccines help in the specific prevention of diseases. Today there are many types of vaccines available to prevent infectious diseases. Nowadays, vaccines are available against tetanus, diphtheria, whooping cough, polio, chickenpox, measles, mumps, typhoid, tuberculosis, hepatitis and many other diseases. Many of these vaccines are given to children under the public health programme of childhood immunization.

Vaccination

Jenner took some pus with a sterile needle from the cowpox rashe of an infected girl and injected it into scratches made in the skin of an uninfected boy, who soon got cowpox. After he recovered, Jenner injected the boy's arm with pus from the spots of a person suffering from smallpox. Luckily, the boy did not get smallpox and Jenner's experiment was successful. The modern term 'vaccination' comes from the Latin words vacca which means cow and 'vaccinia' which means cowpox. It tells us how Jenner made the first vaccine against smallpox using the microbes of cowpox, a similar but less severe disease.

- **Pulse polio programme : The pulse polio programme** is an immunization drive against polio. Polio is a disease of the muscles and nerves which can cause paralysis. To prevent polio, oral vaccines are given periodically to all children under 5 years of age in our country. This is an effort to eradicate polio, so no child will be infected by the polio virus.
- **Smallpox vaccine :** An immunization programme was carried out earlier to eradicate smallpox. Earlier, in smallpox epidemics people were afraid of going near someone suffering from it. Smallpox was controlled and eradicated with the help of a vaccine. There is an interesting story about how the smallpox vaccine and the concept of vaccination came into being.

COMMON DISEASES

Bacterial Diseases and their Pathogens

Disease	Pathogen
Scarlet fever	Streptococcus pyogenes
Gonorrhoea	Neisseria gonorrhoeae
Meningitis	Neisseria meningitidis
Anthrax	Bacillus anthracis
Tetanus	Clostridium tetani
Botulism	Clostridium botulinum
Typhoid fever	Salmonella typhi
Cholera	Vibrio cholerae
Bubonic plague	Yersinia pestis
Whooping cough	Bordetella pertussis
Diphtheria	Corynebacterium diphtheriae
Tuberculosis	Mycobacterium tuberculosis
Leprosy	Mycobacterium leprae
Syphilis	Treponema pallidum
Pneumonia (Pneumococcal)	Streptococcus pneumoniae

Deficiency diseases

Deficient nutrient	Desease
Protein	Kwashiorkor, Marasmus
Vitamin A	Nyctalopia (nigh blindness)
Vitamind D	Rickets and osteomalacia
Vitamin E	Sterility
Vitamin K	Haemorrhage
Thiamin (B_1)	Beri-beri and polyneutritis
Riboflavin (B_2)	Cheilosis
Cobalamine	Pernicious anaemia
Ascorbic acid	Scurvy
Iron	Microcytic anemia
Iodine	Goitre

Some common viral Diseases

Disease	Group	Transmission
Chickenpox	Herpesvirus	Contact and droplets
Poliomyelitis	Picornavirus	Food and water
Common cold	Rhinovirus	Droplets
Influenza	Orthomyxovirus	Droplets
Rabies	Rhabdovirus	Contact with body fluids
Mumps	Paramyxovirus	Droplets
Measles	Paramyxoviurs	Contact and droplets
Dengue fever	Flavivirus	Mosquito bite
Yellow fever	Arbovirus	Mosquito bite
AIDS	Retrovirus	Contact with body fluids

Some Common Protozoan Diseases

Disease	Pathogen	Transmission
Amoebiasis	Entamoeba histolytica	Water and food contamination
Giardiasis	Giardia lamblia	Water and contact
Trichomoniasis	Trichomonas	Sexual contact
Sleeping sickness	Tryponosoma	Bite of tsetse fly
Kala-azar	Leishmania	Bite of sandfly
Malaria	Plasmodium	Bite of female Anopheles mosquito

Genetic Diseases

No.	Couse	Disease
1	Trisomy 21st chromosome	Down Syndrome
2	Trisomy 18th chromosome	Edward Syndrome
3	Trisomy 18th chromosome	Patau Syndrome
4	44 Autosomes + XO	Turner Syndrome
5	44 Autosomes + XXY	Klinefllter Syndrome

Come Common Helminthic Disease

Disease	Pathogen	Transmission
Taeniasis	Taenia solium T-saginata	Pork consumption Beef consumption
Ascariasis	Ascaris	Water and food contamination
Elephantiasis	Filaria	Bite of female Culex mosquito

Some STD and thier Pathogens

Disease	Pathogen
Syphilis	Treponema pallidum
Gonorhoea	Neisseria gonorrhoeae
Herpes genitalis	HSV-2 (DNA) virus
Trichomoniasis	Trichomonas vaginalis

EXERCISE - 1

SINGLE CORRECT ANSWER TYPE QUESTIONS

Q.1 A healthy person is one who is free from -
(A) diseases
(B) mental tension
(C) diseases and mental tension
(D) bacteria

Q.2 Fruit and vegetables bought from the market -
(A) may be coated with pesticides
(B) may carry germs
(C) may carry eggs of worms
(D) all the above

Q.3 Breathing polluted air causes diseases of the -
(A) nervous system
(B) circulatory system
(C) respiratory system
(D) digestive system

Q.4 Which disease is likely to occur in crowded areas ?
(A) Noninfectious
(B) Infectious
(C) Genetic
(D) Deficiency disease

Q.5 What kind of a disease is arthritis ?
(A) An acute disease
(B) A chronic disese
(C) An infectious disease
(D) A communicable disease

Q.6 Which of the following is due to external causes ?
(A) Jaundice (B) Diabetes
(C) Arthritis (D) Cataract

Q.7 Houseflies are the vectors of -
(A) cholera (B) malaria
(C) dengue (D) cataract

Q.8 Mosquitoes spread -
(A) influenza (B) rabies
(C) malaria (D) AIDS

Q.9 Tuberculosis is caused by -
(A) a bacterium (B) a virus
(C) a protozoan (D) AIDS

Q.10 A type of rhabdovirus causes
(A) AIDS (B) TB
(C) influenza (D) rabies

Q.11 The infectious agents responsible for which diseases can be spread when the patient coughs ?
(A) AIDS, T B and hepatitis
(B) TB, influenza and cholera
(C) TB and influenza
(D) TB and hepatitis

Q.12 The diseases that can be transmitted through body fluids are -
(A) AIDS and hepatitis B
(B) TB and typhoid
(C) influenza and cholera
(D) cholera and rabies

Q.13 Leprosy is also famous as -
(A) Koch's disease (B) Hensen's disease
(C) Pertussis (D) Cholera

Q.14 Typhoid fever is caused by -
(A) Giardia (B) Salmonella
(C) Shigella (D) Escherichia

Q.15 One of the following is the correct match for diseases and causative agents -
(A) AIDS-Bacillus
(B) Syphylis-Treponema pallidum
(C) Malaria-Trypanosoma
(D) Gonorrhoea-Virus

Q.16 Genus Aedes is a vector of -
(A) Filaria (B) Dengue
(C) Malaria (D) Elephantiasis

Q.17 Sleeping sickness is caused by -
(A) Entamoeba (B) Gregarina
(C) Trypanosoma (D) Plasmodium

Q.18 Yersinia causes -
(A) Plague
(B) Whoophing cough
(C) Leprosy
(D) Syphilis

Q.19 Which of the following is not a water borne disease
(A) Asthma (B) Cholera
(C) Amoebiasis (D) All of these

Q.20 Leprosy is caused due to -
(A) Clostridium (B) Salmonella
(C) Mycobacterium (D) Bacillus

Q.21 Which of the following does not spread AIDS by -
(A) having sex with unknown person
(B) kissing on lips
(C) transfusing infected blood
(D) taking unterlized injections

Q.22 The disease marasmus in children is caused due to the deficiency of -
(A) carbohydrates (B) proteins
(C) fats (D) vitamins

Q.23 Which disease has been totally eradicated from India
(A) Plague (B) Small pox
(C) Tuberculosis (D) none above

Q.24 Pick up the set of bacterial diseases -
(A) Tetanus, typhoid, tuberculosis
(B) Small pox, influenzae, tetanus
(C) Meningitis, measles, syphyllis
(D) None above

Q.25 Diphtheria is caused by -
(A) bacteria (B) virus
(C) nematodes (D) fungi

EXERCISE - 2

FILL IN THE BLANKS

Q.1 Diseases that can be transmitted from one individual to another are called communicable or ..... diseases.

Q.2 Sandflies spread ..... .

Q.3 Antibiotics are drugs used to cure diseases caused by ..... .

Q.4 A person shows the following symptoms : periodic attacks of shivering followed by high fever. He is suffering from ..... .

Q.5 Diseas due to high blood sugar leve is.

TRUE OR FALSE

MARK THE STATEMENTS TRUE (T) OR FALSE (F).

Q.6 Communicable diseases are caused by external factors.

Q.7 Antibiotics cure viral infections.

Q.8 A chronic disease last for a short time.

Q.9 AIDS and syphilis spread by droplet infection.

Q.10 Screeing of blood donors can help prevent the spread of AIDs and hepatitis B.

VERY SHORT ANSWER TYPE QUESTIONS.

Q.11 Name two noncommunicable diseases.

Q.12 Why do malaria patients suffer from anaemia ?

Q.13 name three diseases that can be prevented by safe driking water.

Q.14 Name the cause of AIDS?

Q.15 What is Rabies also known as ?

SHORT ANSWER TYPE QUESTIONS

Q.16 Mention any two essential conditions required for good health.

Q.17 What is a communicable disease ? Name a communicable disease each that is caused by protozoans, bacteria and viruses.

Q.18 How can biological agents check the growth of mosquitoes ?

Q.19 Whch microorganisms cause TB and influenza? How do these disease spread ?

Q.20 How is HIV transmitted ?

LONG ANSWER TYPE QUESTIONS

Q.21 Explain various types of immunization.

Q.22 Give some general ways to prevent disease.

Q.23 What is vaccine ? Describe the pulse polio programme.

Q.24 What are STD'S. List sone of then with their causal organism.

Q.25 Explain the cause mode of transmission symptom & treatment of malaria.

ANSWER KEY

EXERCISE-1

Ques.	1	2	3	4	5	6	7	8	9	10
Ans.	C	D	C	B	B	A	A	C	A	D
Ques.	11	12	13	14	15	16	17	18	19	20
Ans.	C	A	B	B	B	B	C	A	A	C
Ques.	21	22	23	24	25					
Ans.	B	B	B	A	A					

EXERCISE-2

FILL IN THE BLANCKS

1. Infections **2.** Kala azar **3.** Bacteria

4. Malaria **5.** Diabetes

TRUE OR FALSE

6. T **7.** F

8. F **9.** F

10. T

VERY SHORT ANSWER TYPE QUESTIONS.

11. diabetes, cancer **12.** Plasmodium

13. Chloera, Dirrhoea & Typhoid **14.** HIV

15. Hydrophobia