HUMAN DISEASES CAUSED BY EXTRINSIC FACTORS

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Any change from the normal state causes discomfort or disability or disturb the health may be called disease. The disease can be occurred in any part of the body and may or may not be curable.

The diseases which occur in human body are called human diseases. The human diseases are caused mainly by unbalanced diet, micro- organisms, helminths and pollution.

Diseased Caused by Unbalanced Diet:

Health of an individual depends upon the quality and quantity of food. If an individual takes less or more quantity of food that is not balanced food. Similarly, if an individual takes low quality of food that is also not balanced food. Therefore, different type of diseases caused by unbalanced diet. Some of the major diseases caused by unbalanced diet are:

* Kwashiorkar and Marasmus diseases are caused by deficiency of proteins.
* Nightblindness, scurvy, beriberi and pellagra diseases are caused by deficiency of vitamins.
* Fluorosis, rickets, anaemia and goiter diseases are caused by deficiency of minerals.

The amount of food should not be too much or too less. It should not be disproportionate in terms of nutritional value. Too much intake of proteins, carbohydrates, fats, minerals, and vitamins can also lead to problems. For example, too much of carbohydrate and fat in the food will lead to excess gain of weight, which is called obesity. Obese persons has a number of disadvantages. They are not agile. Moreover, their heart is always overworked. Their blood vessels may become narrowed due to deposition of fat like substance, causing high blood pressure.

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Diseases Caused by Micro- organisms and Worms:

The infectious or communicable diseases are caused by micro- organisms. Micro-organisms include bacteria, viruses, fungi and protozoa. A majority of them do not cause any harm. But some of them are pathogenic, i. e., they cause harm when they enter the body or cells. They can enter the body through the air, through the water, through the food, through the physical contact, through inoculation by other organisms such as insects, and through sexual contact.

Diseases Caused by Viruses

Some common viral diseases are common cold, influenza, measles, chicken pox, poliomyelitis, mumps, conjunctivitis, dengue, hepatitis, herpes, rabies, etc. Viruses causing these diseases spread through air. *Aedes* mosquito spreads dengue and yellow fever viruses, *Culex* spreads encephalitis virus.

One of the most dreaded diseases of modern time is AIDS [Acquired Immuno Deficiency Syndrome]. The AIDS virus, commonly referred to as the human Immunodeficiency virus (HIV) spreads through (i) sexual contact (if one partner is HIV positive) (ii) blood transfusion—where the donor's blood is HIV positive (iii) sharing of needles among drugs addicts and (iv) from a HIV positive mother to her baby while it is still in her womb or while breast- feeding. This disease does not spread by causal contact between an AIDS patient and another person. Lymphocytes produce antibodies which defend the body from attacks by other organisms. The HIV or AIDS virus attacks the lymphocytes of the blood and destroys them. The immune system of the body being thus impaired, the body cannot fight any infections. An AIDS' patient usually dies from complications arising out of infections. No drugs has been found to cure AIDS as yet, but there are some drugs available which temporarily afford relief.

Diseases Caused by Bacteria:

Some common diseases caused by bacteria are: tuberculosis (TB) , typhoid, gastro-enteritis, leprosy, pneumonia, cholera, tetanus, diphtheria, whooping cough (pertussis), etc. Bacteria causing these diseases enter the body through water, food, and contact. Many of the bacterial diseases such as typhoid, cholera, leprosy, etc., are spread by house fly. Some bacterial infections are transmitted through sexual contact e.g. syphilis and gonorrhea.

Diseases Caused by Protozoa:

A lot of diseases are caused by protozoa. *Plasmodium* causes malaria and is spread by the female *Anopheles* mosquito. *Leishmania donovani* causes Kala- azar and is spread by the sandfly. *Entamoeba histolytica* causes amoebic dysentery (amoebiasis) and spread by the housefly. *Girdia lamblia* causes giardiasis which is characterized by malabsorption diarrhea.

Diseases Caused by Helminthes:

There are number of diseases caused by helminths. Some important helminths diseases are : Taeniasis, Ascariasis, Filariasis and elephantiasis. The disease taeniasis is caused by adult tapeworm (*Taenia solium*) which lives in the small intestine of human. It causes abdominal pain, vomiting and discomfort. It causes chronic indigestion and may lead to weakness. Ascariasis is caused by roundworm (*Ascaris lumbricoides*) which is a parasite in the intestine of human. It causes abdominal discomfort, diarrhoea, vomiting, weightloss, anaemia, weakness etc. *Filarial* worms causes (filaria) filariasis and elephantiasis Those afflicted with filaria suffer from fever at night. A person suffering from elephantiasis is characterized by swellen legs. The filarial worm is spread by the *culex* mosquito. Hook worms cause anaemia and pain in the stomach.

Disease Caused by Pollution:

Pollution of the environment is a major source of diseases. Not only does it disturb the delicate balance in nature but causes different diseases.

Chemical Pollution:

Chemicals are polluting our air, water and land at an ever increasing rate. The air gets polluted by vehicular emissions and by emissions from industries. The offending substances are carbon monoxide, carbon dioxide, oxides of sulphur and nitrogen and particulate matter. These cause various respiratory diseases and can cause headache, bronchitis (swelling of bronchi), breathlessness, chest pain, etc. In addition, they may cause allergy, dizziness, irritation in the eye and nose. Sometimes poisonous gases escape from industrial units which can cause even death.

The waste materials and untreated chemical wastes of industries dump on land and in water bodies. These wastes may contain harmful substances including lead, mercury, and benzene. Chemicals used as pesticides also find their way into

underground water or get washed away by rainwater into other sources of drinking water. Drinking water from these polluted sources can cause health problems. Fishes in heavily polluted waters die or have so much accumulated toxic chemicals in their bodies that they are unfit for consumption. In the coastal town of minamata (Japan), a factory used to dump into the sea untreated waste containing a compound of mercury. People consumed seafood containing high concentrations of this compound and many of them became afflicted by severe neurological disorders. This disease came to be known as minamata disease.

Pesticides used in agriculture can also get into our body if we do not wash fruits, vegetables and grains properly. DDT and chlorinated hydrocarbons can get into our bodies through the food-chain.

Diseases Caused by Radiation:

Ultraviolet rays, x-rays, and gamma rays enter the body and pass through the cells causing serious damage to molecules, particularly to the genes.

The sun is the prime source of ultraviolet radiation. The sun emits infrared (IR) radiation, visible light, and ultraviolet (UV) radiation. Most of the ultraviolet radiation is absorbed by the ozone layer in the atmosphere, but some of it reaches us. We have a system of enzymes in our body whereby our genes are repaired. The damage caused by ultraviolet radiation is largely repaired. Prolonged exposure to the sun can, however, cause skin cancer.

X-ray has shorter wavelength and hence, has greater energy. X-rays pass through the genes (DNA) and break them. Unless these breaks are re-joined, these genes are rendered useless. Sometimes broken or damaged genes are repaired. But the repair system may leave behind some error. This means that genes changed (mutated). Most mutations are harmful and cause disease. Moreover, when these genes are transmitted to the offspring, the latter will suffer from the disease. In this way the disease becomes hereditary. Mutations may also lead to cancer.

Gamma rays are emitted by the fission of atomic nucleus. Gamma ray has a very short wave length, hence it has very high energy. Gamma rays can cause extensive damage to the cellular organelles, enzymes, RNA and DNA (genes). They may destroy cells, induce unwanted cell division leading to cancer. The effects of gamma rays include RBC destruction, blood cancer (leukemia), chromosome breakage and gene mutations. Large-scale nuclear radiation's caused by the

explosion of atom bomb can have crippling effect on the entire population including babies who are still in the womb of their mothers. It may effect future generations also. We have evidence of this from atom bomb explosions at Hiroshima and Nagasaki in Japan during the Second World War. Accidents in nuclear power reactors can also cause extensive human suffering. Some years ago in a nuclear accident at Chernobyl (Ukraine), thousands of people suffered radiation-related damage.

Preventive Measures:

In general, the following rules can be applied for preventive measures:

Personal hygiene and community hygiene:

Personal hygiene and community hygiene is the main point for the prevention of diseases. If we maintain our cleanliness and surroundings the communicable diseases can not be occurred. Cleanliness dissuades the growth and propagation of diseases – causing organisms.

1) **Balanced Diet :**

A number of diseases caused due to deficiency of proteins and vitamins could be prevented by taking balanced diet. It requires a knowledge of the ingredients in different food items and their food value.

Immunization :

To prevent the occurrence of a number of diseases, immunization against them is highly desirable. Vaccines are available against pox, diphtheria, tetanus, whooping cough, tuberculosis, etc. Children should be given these vaccines at the correct age.

2) **Disposal of waste :**

Garbage should be kept covered to keep out flies and mosquitoes which are carriers of germs. Defecating in the open or in ill-designed latrines contaminates surface and underground waters, leading to water born diseases. Low – cost, scientifically designed latrines are now available. The sewer systems should be isolated and free from cracks, etc., to prevent contamination of water bodies. The sewage should be treated before disposal in the water bodies.

3) **Clean sex life :**

A number of diseases like AIDS, syphilis and gonorrhea are spread by irresponsible sexual behavior. For the prevention of sexual diseases the following points should be applied:

i) Cleanliness of reproductive organs should be maintained.

ii) Should avoid unsafe sexual contact.

iii) Should avoid multiple sexual partners and homosexuality.

iv) Should test the blood before blood transfusion.

V) Should use disposable syringe and needle.

4) **Law :**

The legal procedures should be adopted for the control of different types of pollution.

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