



---

## ENVIRONMENT AND ITS INFLUENCE ON HEALTH

**Dr. Kale V. P.**

**Asst. Professor in Geography , Vitthalrao Shinde Arts College, Tembhurni ,  
Dist-Solapur (Maharashtra)**

---

### ABSTRACT

*Health is considered as a major determinant of happiness. The link between health and development is very close. Creativity of human being is depended on his health condition. In this context, Medical Geography as a branch of human geography deals with such aspects. The activities of man are controlled by the nature. "The genotypic characteristics of humans are inborn and given, whereas the phenotypic characteristics are subject to change in response to environmental stresses, on the one hand, and the genotypic characteristics of individuals concerned, on the other. Therefore, the environment is nothing but it is the matrix of physical, biological and social circumstances surrounding man and affecting his well-being subsequently on human health.*



**KEYWORDS:** Health, , happiness, physical environment, biological environment.

### INTRODUCTION:

The activities of man are controlled by the nature. "The genotypic characteristics of humans are inborn and given, whereas the phenotypic characteristics are subject to change in response to environmental stresses, on the one hand, and the genotypic characteristics of individuals concerned, on the other. Genes determine the genotype; the environment in its broader senses determines the phenotype. Since the genotype and phenotype together determine the health of an individual," (Misra R.P., 2007). The health of an individual or of community is closely related to the environment.

Environment means different things to different people. For traditional geographers, environment means natural environment; sociologists stress on social environment; while anthropologists see environment in cultural term etc. Each discipline defines environment in its own way. Medical geography treats environment as a composite milieu within which human beings live and work. It includes the natural as well as the social, cultural and economic environment (Misra R. P., 2007).

Place and location can influence health it is a very old and well-known concept. As far back as the time of Hippocrates, physicians had observed that certain diseases seem to occur in some

---

places and not in others or the intensity of some diseases is usually 'region-specific'. Hippocrates in his classical essay on *Air, Water and Places* recognizes the role of water with its source of origin from various structural zones of earth and if contaminated its adverse impact on human health. He envisaged the environmental contamination as responsible for the ill health conditions occurring in a particular area.

Therefore, the environment is nothing but it is the matrix of physical, biological and social circumstances surrounding man and affecting his well-being subsequently on human health. The health status of an individual or of community is determined by the interplay and integration of two ecological universes viz. I) the 'internal' environment of man pertains to "each and every component part, every tissue, organ and organ- system and their harmonious functioning within the system". II) The external environment of those things to which man is exposed after conception (Park and Park, 2011).

In the modern concept, a disease is a disturbance in the delicate balance between man and his environment. The key of the nature, occurrence, prevention and control of the diseases lies in the environment. Without this knowledge, this key may not be available to the physician who desire to cure that disease, prevent or control it (Park and Park, 1979).

The researcher has been tried to analyze the effect of environment on the health. In this paper, physical and moderately Biological factors are taken into considerations, which are responsible for the human health.

#### **OBJECTIVES:**

- I. To study the influence of physical environment on human health
- II. To study the biological environment and human health for selected diseases.

#### **PHYSICAL ENVIRONMENT AND HEALTH**

Physical environment is the important factor which affects the human life. Physical environment is applied to non-living things and physical factors (e.g. air, water, soil, housing, climate, geography, heat light, noise, debris, radiation etc) with which man is in constant interaction (Park and Park, 2011). Physiography, drainage and climate are the dominant factors, which affect the health of man.

#### **PHYSIOGRAPHY**

Physiography is one of the dominant parameters of physical environment and it has impact on health. The Physiography determines the distribution of diseases in the area. Some diseases are found at specific physiographic features. The correlation between altitude and its effects on the spread of vectors of the diseases has already been proved. In high altitude region, due to its low temperature, clean air conditions and least polluted air does not allow any vectors of survival to carry the disease. So many T.B. sanitary clinics and health resorts are located at the high altitude.

#### **CLIMATE**

Climate is defined as the average weather reckoned in months, years and decades. It can be also defined as the combined effect of mutual interaction between suns radiation, atmosphere, oceans, and lithosphere on the man. Its chief elements are temperature (solar radiation), air pressure, winds, humidity and precipitation. Climate has a great impact on human health (Misra R. P., 2007).

---

It may be positively stated that climatic conditions have an important effect on the health and is evidenced by the geographical distribution and seasonal prevalence of diseases. There is close relationship between climate and diseases. Certain diseases are seasonal. Dehydration and cholera are common during hot summers, malarial fever is during rainy season and cough, cold and bronchitis are during winters. The most common season-specific diseases are infantile paralysis, dysentery, chickenpox, common cold and heat stroke. When humidity in the air is low, the delicate membranes of the nose, throat and other respiratory tracts are adversely affected and makes people fall easy prey to common cold (Misra R. P., 2007).

### **BIOLOGICAL ENVIRONMENT AND HEALTH:**

The biological environment is the universe of living things, which surrounds man, including man himself. The living things are the viruses and other microbial agents, insects, rodents, animals and plants. These are constantly working for their survival, and in this process, some of them act as disease-producing agents, reservoirs of infection, intermediate hosts and vectors of disease (Park and park. 2011). In the interaction between man and ecological system, there is constant adjustment and readjustment. Some time, biological infectious agents invade and multiply in a human body. This cause harmonious relationship is disturbed and result into disease development.

The germs can be transferred from man to man through many media such as air, water, food, clothes etc. and through many other pathological factors (Karande H. Y. 2005). The pathogens of most of the diseases have always been presented in our environment, which is responsible for diseases Gastroenteritis bacteria, which are responsible for the spread of cholera, dysentery, pneumonia, and enteric fever. Protozoa originates dysentery. Parasite causes Malaria, Tapeworm and viruses cause Poliomyelitis, Measles, Trachoma, Yellow Fever and Infectious Hepatitis. These pathogens directly enter into the body through inhalation, ingestion, abrasion, and wounds and spread cholera, Tetanus, Enteric fever and Tuberculosis.

### **I) CHOLERA:**

Cholera is an acute diarrheal disease caused by vibrio cholera. There are more than 60 serogroups of vibrio cholerae, but only sero group 01 (Vibrio cholerae) and 0139 cause cholera. Vibrio cholerae 01 has two biotypes (i) classical and (ii) El Tor. Each biotype further divided each into three serological types namely Inaba, Ogawa and Hikojima. Human being is the only known as the reservoir of cholera infection.

Cholera is not choosy among its potential victims and it attacks the persons of all ages and sexes, both in rural and urban areas, and in western or eastern countries. It is, however more prevalent in areas of where hygienic and sanitary conditions are poor and diarrheal diseases common (Misra R.P., 2007). Cholera is both an epidemic and endemic disease. The epidemicity and endemicity of a disease is depended on the characteristics of the agent and those of the system (environment) (Park and Park, 2011).

The causative agents spread cholera directly from man to man through faecally contaminated water, contaminated food and drinks and also through direct contacts of contaminated fingers as well as carelessly handling excreta etc. Environmental factors, which govern cholera, are high temperature, high humidity, low-lying lands, ponds, lakes and many other bodies' water rich in organic matter, salts, and shelter from the rays of the sun and from the rain (Howe G.M. 1976).

---

## II) DYSENTERY AND DIARRHOEA:

The groups of contagious diseases are clubbed together under the head dysentery and diarrhea. It may not be a great killer, but it does weaken the immunity of a large number of people, especially the poor living in rural areas and urban slums, and thus exposing them to become victims of many other diseases.

Diarrhea can be defined as the passage of loose and watery stool at an abnormal frequency (Misra R.P. 2007). Diarrhea is due to the infection of virus, bacteria or parasites, contagious water and spoiled food, food poisoning, allergies, Emotional turmoil eating of indigestible. Microorganisms cause the inflammation.

Dysentery means dysfunction or impairment of the functioning of the intestines. Medically speaking, it means the passing of blood or mucus in the motion. Dysentery is caused by several types of microorganisms including bacteria *S. shiga*, *S. flexure*, *endamoeba histolytica*.

Genus shigella is a group of bacteria, which can infect the colon to cause dysentery, is called bacillary dysentery. The shigellae bacteria are carried to man by the flies. The infection rate of bacillary dysentery depends on personal hygiene such as unwashed hands and unclean environment (Misra R.P.).

## III) MEASLES:

Measles is a highly infectious disease of childhood caused by a specific virus of the group myxoviruses. The word rubeola means red spots and it is characterized by fever and catarrhal symptoms of the upper respiratory tract (coryza, cough) followed by a typical rash transmission occurs directly from person to person mainly by droplet infection and droplet nuclei 4 days before 8 after onset of rash (Park and Park, 2011).

Measles is a once in a lifetime diseases rarely does it attack the same person twice. It is seasonal, occurring in winter spring, but can appear in any season. The causative agent of the measles is a virus which it is such a highly communicable disease that the slightest contact with an active case may infect susceptible persons. The disease spreads through the secretions of the eye and respiratory passages of patients deaths attributed to measles result from the secondary broncho-pneumonia caused by bacterial organisms entering the bronchial tree globally about a million children die of measles (Misra R.P. 2007).

## IV) LEPROSY:

Leprosy is probably the oldest and also one of the most baffling diseases of humankind. Leprosy disease is also called 'Hansen's disease', is a chronic infectious disease caused by mycobacterium leprae. It affects mainly the peripheral nerves, skin, muscles, eyes, bones, testes and internal organs and cause the skin swell and become lumpy and discolored. It is one of the most feared diseases because it damages the patients' appearance such as face deformities, hand deformities and feet deformities etc. Leprosy is caused by a bacillus bacterium. The bacilli have to penetrate the human tissues and gradually they spread along the nerve fibers. Children are more susceptible to leprosy than adults are because their developing body produces changes in the skin, and hence their cutaneous nerve plexuses are easily damaged (Misra R.P. 2007).

Leprosy is classified in three different types. Which are Madrid, Ridley-Japling; and Indian moist climate is more favourable for leprae transmission. Overcrowding is another favorable factor in the transmission of the disease leprae. It enters the body only through cuts and injuries. Leprosy is more common in hot and humid climatic zones and there is close relationship between the

---

incidences of leprosy and tuberculosis, because immunity from tuberculosis also makes a person immune from leprosy.

#### V) CANCER:

Now cancer is one of the most important causes of death in the modern world. Cancer is not just one disease, but a large group of almost one hundred diseases. Two main characteristics of the cancer are the uncontrolled growth of the cells in the human body and the ability of these cells to migrate from the original site and spread to distant sites. If the spread is not controlled, it destroys healthy tissues and endangers the life and cause the death. Cancer occurs in most species of animals, and in many kinds of plants and in human beings.

The term cancer is frequently used as a synonym for malignant tumour in contradiction to the benign tumours that are localized without tendencies to spread to other cells, tissues and organs. A majority of cancer is caused by changes in the cell's DNA because of damage due to the environment. They are basically three causal factors for cancer which are geographical, occupational and cultural and in real term it means bad environment, bad habit, bad working conditions and in some cases bad luck (heredity) (Misra R.P. 2007).

Environmental factors tobacco, alcohol, dietary, occupational exposures, viruses, parasites, customs, habits and life styles, and many others such as sunlight radiation air and water pollution, medications and pesticides are causing agents called which are carcinogens (Park and Park, 2011).

#### VI) MALARIA:

Malaria is a protozoal disease caused by infection with parasites of the genus plasmodium and transmitted to man by certain species of infected female Anopheles mosquitoes (Park and Park 2011). It is common in tropical and subtropical areas. The attacks commonly present with fever, chills, nausea and vomiting. One to three million people dies due to malaria each year in the world.

The optimum temperature for the development of the malaria parasite in the insect vector is between 20°C to 30°C (Park and Park) and high humidity provides opportunities for the breeding of mosquitoes and give rise to epidemics of malaria. The atmospheric humidity has a direct effect on the length of the life of the mosquito. In high atmospheric humidity, mosquitoes are more active.

The life cycle of the plasmodium protozoa includes three basic stages. The first stage occurs in the mosquito's body and second and third stages take place in a person's body. The first stage begins when the mosquito bites someone who has malaria. Plasmodia enter the insect's body and reproduces in its stomach (Karande H.Y. 2005).

The malarial parasite has four distinct species: *P. vivax*, *P. falciparum*, *P. malariae* and *P. ovale* (P standing for plasmodium) (Misra R.P. 2007).

#### VII) TETANUS:

Tetanus is an acute disease that affects muscles. It is induced by the exotoxin of clostridium tetani causes the muscular rigidity with painful paroxysmal spasms of the muscles of the face neck, back and abdomen. It is of two types e.g. neonatal and general. The neonatal type is a killer disease.

Tetanus is due to the physical and ecological environment. The agent clostridium tetani is gram-positive, anaerobic spore bearing organism resembling a drumstick. The natural habitat of the organism is soil and dust it does not infect human through a vector. They are found in the intestines

---

of many herbivorous animals. Tetanus is a disease of the active age (5-40 years) because this group of people is exposed to a variety of physical environmental hazards. Rural areas show more cases than urban areas. The transmission of bacilli organism is simply any wound or injury exposed to dust or soil having tetanus spores will be a potential source of contamination once inside the wound; the spores germinate to produce exotoxin, which binds the receptor (Misra R.P. 2007).

### VIII) PNEUMONIA:

Pneumonia is a lung disease caused by inflammation. The disease pneumonia results from infection by virus, bacteria, fungi or other microbes. In most cases, a person gets pneumonia by inhaling viruses or bacteria. The droplets are spreads into the air when an infected person coughs or sneezes. Some time in many cases of pneumonia result when bacteria, which are normally present in the mouth, nose and throat, invade the lungs.

In most of the cases, pneumonia results from infection by bacteria is called pneumococcal and also is called mycoplasma pneumonia which occurs mainly among children inflammation is likely to be set up by sudden change from warm to cold air or by air polluted by some toxic substances (The world book, 1994).

### IX) TUBERCULOSIS:

Tuberculosis is a specific infectious disease caused by mycobacterium Tuberculosis which mainly affects lungs and cause pulmonary tuberculosis. It can also affects intestine, meninges, bones and joints lymph glands, skin and other tissues of the body. The disease is usually chronic with varying clinical manifestations (Park and Park, 2011). Tuberculosis is often called as T.B.

The agents that cause the disease are of three types and they are human, bovine and avian. The human and bovine types can infect human and animal hosts reciprocally. The bovine type can be transferred to man is through milk, meat or contact with infected animals (Misra, R.P. 2007).

About three million people die due to tuberculosis in each year and four to five million new cases occur each year in the world. Tuberculosis strikes all ages of people but it is more common among the younger and among the people whose immune systems have been poor (suppressed). It is more prevalent in males than in females.

Infection is likely to result from tubercle bacilli that penetrate, beyond airways lined with mucus into the alveolar sacs deep in the lungs. Primary infection is a stage in the development of tuberculosis but it does not always lead to the disease. Large ameba like cells called alveolar macrophages usually engulfs tubercle bacilli that enter an alveolar sac. Normally these cells are able to digest bacteria. However, tubercle bacilli resist digestion and most of them actually thrive and multiply inside the macrophages. Some of the macrophages carrying these bacteria may migrate to the mucus layer and be carried out the body. Other may carry the bacteria to another part of the lungs or into the lymph or to a nearby lymph node or even into the blood (World book 1994).

### CONCLUSION

The relationship between environment and human health reveals that the physical and biological environment are the significant elements, which determines the health of the people.

### REFERENCES

1. Misra, R.P. (2007):"Geography of Health: A Treatise on Geography of Life and Death in India", Concept Publishing Company, New Delhi, P.69.

2. Park, J. E. and Park, K. (2002): "Textbook of Preventive and Social Medicine", Banarsidas Bhanot, Jabalpur, India, P. 20.
3. Karande, H.Y. (2005): "Spatial Pattern of Diseases and Medical Care Facilities in Western Maharashtra. Unpublished Ph.D. thesis submitted to Kolhapur University, P. 6.
4. Park, J. E. and Park, K. (2002): op. cit., Pp. 163-164.
5. Misra, R.P. (2007): op. cit., P. 45.
6. Park, J. E. and Park, K. (2011): "Textbook of Preventive and Social Medicine", Banarsidas Bhanot, Jabalpur, India, P. 35.
7. Misra, R.P. (2007): op. cit., Pp. 74-76.
8. Park, J. E. and Park, K. (2011): op. cit., P. 207.
9. Howe, J.M. (1976) : "Environmental Factors in Disease, In Health and Environment" by Leinhen J. and Fleetscher W.W.(Ed.)Blackis, London P.16-32
10. Misra, R.P. (2007): op. cit., P. 212.
11. Park, J. E. and Park, K. (2011): op. cit., P. 231.
12. Park, J. E. and Park, K. (2011): op. cit., P. 235.