

Unit 4

Population → Group of individuals belonging to the same species which live in a given area at given time.
Population density → Number of individuals of the population per unit area per unit volume.

Parameters effecting population

- Birth rate (OR) Natality → Number of live birth per 1000 people in a population in a given year.
- Death Rate (OR) Mortality → Number of deaths per 1000 people in a population in a given year.
- Immigration → It denotes the arrival of individual from Neighbouring population.
- Emigration → It denotes the disposal of individual from the original population to new areas.

Population growth The change in population per unit area at particular time is called population growth.

Reason for over pollution

- High Birth Rate
- Low Death Rate
- Migration
- Illiteracy

Population explosion When the population increases suddenly it is termed as population explosion.
Population crash When population of human being decreases it is called population crash.

Effect of population explosion

- 1) High Demand of Basic Need
- 2) Reduction in Natural Resource
- 3) Generation of Huge quantity of waste
- 4) Other effects

Control of population growth

- 1) Education
- 2) Publicity
- 3) ~~Government~~

Age structure of population can be classified into 3 classes

- 1) Pre-reproductive population (0 to 14 year)
- 2) Reproductive population (15 to 44 years)
- 3) Post reproductive population (Above 45 years)

Total fertility rate (TFR)

Average number of children delivered by a woman in her life time. The ~~TFR~~ TFR varies from 2 in developed to 4.7 in developing countries.

Infant Mortality \rightarrow Percentage of infant died out of those born in one year.

Human population growth was slow till the 17th century, followed by a rapid population explosion. Population growth in developing nations is faster than that in the developed world. The population growth of India, a developing country, with a population of 10 billion, living on 2.2 per cent of the world's land area, is extremely rapid. Moreover, the decrease in famine-related deaths and the infant mortality rate are partially responsible for this rapid population growth. In addition, advances in public health, nutrition, sanitation and medicine have increased the life expectancy of countries, worldwide.

The population explosion throughout the world and in the developing countries in particular, is increasingly threatening the global environmental balance due to the fast depletion of resources and energy sources due to the increasing demand. This is leading to rapid environmental degradation and pollution.

The population growth in the USA is one of the highest among the developed countries at about 1 per cent or nearly an addition of nearly 2.7 million people per year. The fertility rate in developed countries is projected to increase slowly to 1.84 children per woman in 2045-2050 from the present level of 1.56 per woman. In the least developed countries the fertility of children per woman will dip to 2.57 children per woman by 2045-50.

Family welfare programmes

- Family welfare programme was implemented by Government of India as a voluntary programme. It is a policy of growth covering human health, family welfare children and women's right.
- It provide educational and clinical ~~ser~~ services that help couple to choose how many children to have and when to have them.
- Family planning programme provide information on birth spacing birth control and health care for pregnant woman and infants.
- It also reduced the number of legal and illegal ~~ab~~ abortions per year and decreased the risk of death from pregnancies.

Objective

- 1) Slow down the population explosion by reducing fertility.
- 2) Reduce infant Mortality rate to below 30/1000 infants.
- 3) Achieve 100% registration of birth, death marriage and pregnancies.

- 4) Encourage late Marriage and late child bearing
- 5) Prevention and control of communicable diseases
- 6) Constrain the spread of Aids / HIV
- 7) Enables to improve woman's health education, employment.

Family Welfare Programme

The family welfare programme not only covers family planning to control population growth but also extends to welfare measures for children, women, the aged, the handicapped and the less privileged. These welfare measures aim to meet the needs for food, shelter, education, medicine and development, of the most vulnerable sections of society so as to protect them from hunger, poverty, undernourishment and underdevelopment which are the consequences of population growth and overexploitation of the natural resources and the environment.

Family planning

Family planning programmes provide educational and medical services which help couples to choose their family size and when to have children. The size of the family is smaller in educated and economically better-off families. Illiteracy and lack of education are associated with a high rate of population growth in developing and underdeveloped countries, including India.

Women and child welfare

- In the country like India, women are always having a place in the holy sermon, Even people feel that the women are being a constant supporter to his family members and especially her husband.
- But on the other hand, the evils like dowry and female feticide are being the obstacles to the growth and development of the women.
- It has been seen that most of the women are living in their depressed, crushed and exploited personalities.
- Though some women are found dominating in exposing their strengths and talents. Now a days women are leading in almost all fields.
- In the election also 33% seats are kept reserved for women, so that they can explore their limits and can be a part in economic and social advancement.
- The Reason why we need to provide some statutory protection to the Rights of the women is they are being forced by the family members and societies not to think out of the box.
- After marriage women are not encouraged to take part in any productive activities and are only ~~also~~ allowed to take care of their family and adjust with the New environment.
- The traditions like dowry, sati, poatha and encouraging only male birth necessitates the need to provide some statutory protection to the Rights of women.

- Following are some of the acts which helps the women to stand on their feet and enables them to fight against injustice.
- 1) Dowry prohibition act 1961 : to pay or demand for dowry is a Non-cognizable ~~off~~ offence (it is cognizable as per the ~~amende~~ amendment Made in the act after wards)
- 2) Hindu widow Remarriage Bill
- 3) The Hindu Women Rights to property
- 4) The Hindu Succession act
- 5) Women and girl act 1956 → To protect or to uplift from entrapping women to Non-ethical act.
- 6) The equal Remuneration act → to equalize the wage ~~rate~~ ^{rate} for Men and women employee working at the same posts.

Child welfare

Following are some of the programmes undertaken for child welfare under the "National Children BOARD".

- 1) Toy Bank Scheme (1986)
Toy are collected in schools from children ~~are~~ and are sent to anganwadi, Balwadi and Nurseries for distributing to children who cannot afford to Buy such toys.
- 2) Balwadi Nutrition Programme (1970-71)
 - To provide Full Nutrition
 - Provide Facilities and informal pre-school Education to children 3-5 years of age.
- 3) Integrated child development Service.
 - Improving Nutritional and health status of children.

- Promotes psychological and social development of children
- Reducing incidence of their malnutrition, mortality and school dropout.
- 4) Child Labour eradication scheme (1994)
To shift the child labour from hazardous industries to school.
- 5) Mid-day meal scheme (1995)
Primary schools are provided free mid-day meal.
- 6) The child labour (Prohibition and Regulation) act 1986.
Prohibits the employment of the children under the age of 14 years.
- 7) Integrated child development Programme (1975 to 76)
 - Supplementary Nutrition
 - Immunization
 - Health checking services
 - ~~Health~~ Health education
 - other Related services

Women and Child Welfare

Women and child welfare are very important for a sustainable environment and a healthy society. Women in the developing world invariably occupy a subservient status within the family and society. Oven smoke is the third highest cause of diseases and death after dirty water and lack of sanitation. About 44 per cent of the 40 million HIV/AIDS affected adults are women. India, as per the 1991 census, has 150 million children, constituting 17.5 per cent of the total population. In India, the Department of Women and Child Development was set up in the year 1985 as a part of the Ministry of Human Resource Development to give the much needed impetus to the holistic development of women and children. Besides playing a nodal role, the Department implements certain innovative programmes for women and children. The secretary is assisted by four joint secretaries, who head Child Development, Child Welfare and Nutrition, Women's Development and Micro Credit Development Bureau.

Education and Human health

1) Human population and environment.

- due to increase in population, we started destroying Natural resource to obtain some of the Service like
- Destruction of forest for fire wood, construction and furniture
- Drilling the Bottom of the sea for obtaining oil for transportation
- Converting forest into agricultural land for growing and increasing food production.
- use of water at resident and industries, construction of dams for water storage.
- Land pollution due to the establishment of textile and dyeing - bleaching industries.

In the process of Making life More Comfortable we degraded the environment.

The environment pollution is the effect of all human activities like urbanization, industrialization and population density.

effect on human health due to pollution by population growth.

- Increased population due to Migration of Rural people to urban areas, increased the pollution in the cities and broke the villages.
- The immediate increase in the urban population causes the problem of housing as rent may increase and poor class will be unable to get proper accommodation.

- They will start living in the slum area, where there are no facilities like sanitation, water supply, electricity and as such the chances of pollution increases.
- Increased pollution may also result into some health problems to the people that area and the areas surrounding the slums.
- Due to air, water and soil pollution there might be chances of epidemics to attack the city.

Classification of diseases

- Epidemic** → Some type of diseases are being suffered by the whole society or a locality for a particular time period only such diseases called epidemic. Example In Monsoon due to heavy rain and wet environment Malaria may start spreading as wet atmosphere is suitable for the growth of Mosquitoes.
- Endemic** Some disease are caused due to some particular situation like population density, In such region skin related diseases may start due to filth and uncleanness it may last for a long time.
- Chronic disease** Disease lasting for very long period and causing piercing pain.
- Water, air and Soil borne diseases** → Lung cancer, Burning Sensation.
- Communicable & Non-communicable diseases** → Small pox, viral Hepatitis cholera etc.

Preventive Measures

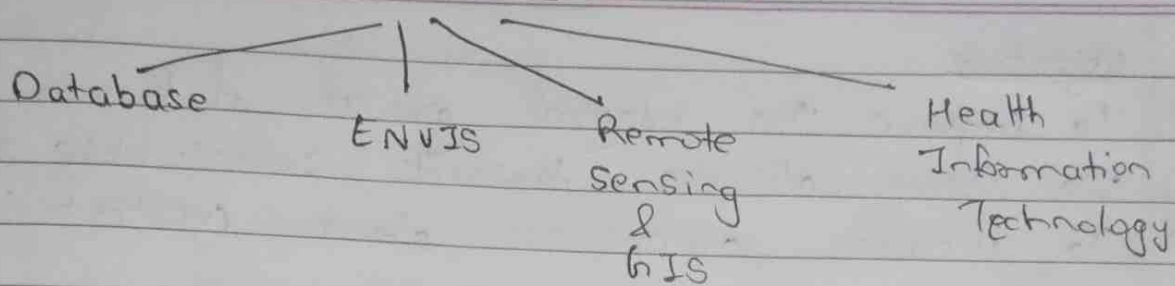
- a) Always wash your hand before eating.
- b) Eat food always in hot condition.
- c) Avoid plastic containers.
- d) Wash the vegetable and fruits with clean water before cooking.

Environment and Human Health

Human activities in every sphere of life have continuously been changing our environment which in turn is affecting human health. Millions of people, mainly children are malnourished and in poor health due to parasitic infections such as amoebiasis and worms, occurring due to infected food or water. About three million children die each year across the world from water-borne diseases such as diarrhoea. These are caused by bacteria or viruses. The main factors are unclean water and dirty hands and malnourished children suffer the most. Diarrhoea can be prevented through exclusive breastfeeding, improved weaning practices, washing hands, keeping food and water clean, sanitary disposal of stool and following Oral Rehydration Therapy. Oral Rehydration Therapy (ORT) is the process of continuous replacement of essential body fluids and salts in proper quantities during the attacks of diarrhoea. This prevents dehydration and nurses the child back to health.

Disasters such as floods, storms, hurricanes and tsunamis kill many people every year. Unprecedented drought or rainfall also leads to water-borne diseases. Symptoms of global climate change such as global warming have serious health implications. The environment and human health are interdependent. Clean potable drinking water and nutrition are absolutely essential for human health and thus for sustainable environment.

Role of IT



1) Database

- Wildlife database
- Disease database
- Forest cover database

2) Remote sensing and geographical information system (GIS)

- Resource Mapping
- Deforestation
- Water logging
- Environmental conservation

3) Environmental information system

- Network in pollution control (ENVIS)
- Clean / Green Technologies
- Renewable energy

4) Health information technology

- X-ray
- Testing DNA
- Laser treatments
- Finger Prints

Role of Information Technology in environment and human health

New technologies such as information technology, the internet and satellite communication improve the interaction between people and institutions. Information Technology, or IT, makes it easier for people to interact with the government, as well as share information globally and instantaneously. The development of information technology has caused a knowledge explosion. Our society is increasingly becoming a technological society where IT is used in all spheres of life. Accurate and timely information about various environmental changes are of great significance. Information technology has also been supporting planning, developmental policymaking, statistics generation and maintenance, natural resource management, census demographic research analysis and forecasting and also in different spheres of governance, linking together citizens, schools, libraries, newspapers, local authorities, institutions and people. In doing so, IT has created a powerful knowledge sharing/managing infrastructure.

value educationobjective

- i) To improve the integral growth of human being
- ii) To Create attitudes towards sustainable lifestyle.
- iii) To increase awareness about constitutional rights
- iv) To understand about ~~the~~^{our} natural environment

Methods of imparting value education

- i) Telling
- ii) Modeling
- iii) Role playing
- iv) Problem solving
- v) studying biographies of great man

Value Education

Value education in the context of the environment must transmit environmental values to all members of the society. These values include value for nature, cultures, human heritage, equitable use of resources and common property resources, social justice and protection of the environment, among others. The National Resource Centre on Value Education was set up at NCERT by the Government of India to realize value-based education at the school stage in the country.

AIDS / HIV

AIDS → Acquired Immuno deficiency Syndrome
 Syndrome means a group of symptoms
 It is cause due to HIV

Causative agent → HIV (Human immuno deficiency virus) It HIV is a retrovirus which means that its genetic material is RNA and also contain the reverse ~~trans~~ transcriptase gene. means DNA to RNA then protein but here it is in reverse order.

HIV/AIDS

Today, there are an estimated 42 million people living with HIV or AIDS worldwide. This includes about four million people in India. A person infected with HIV is referred to as an HIV positive person. AIDS is caused by the HIV. AIDS is fatal. However, HIV positive persons may not have AIDS. HIV-contaminated blood can transmit the virus through transfusion of blood and blood products. Breast milk can also transmit HIV infection to the infant.

Prevention is the only solution available against HIV/AIDS. Awareness and proactive action can ensure a HIV/AIDS-free society. Proper medical care to a HIV positive pregnant lady can prevent the transmission of the HIV infection to the new born. Every woman should know about HIV and AIDS to protect herself and

her family. According to a World Health Organization estimate, approximately 44 per cent of the 40 million adults living with HIV/AIDS are women. In a developing country such as India, HIV affects people in the productive age groups and leads to premature deaths.

7.4 HIV/AIDS

AIDS is one of the most serious deadly diseases in human history. The first cases of AIDS in the world were reported in New York and San Francisco, USA in 1981. In India, the first HIV infection report came from Chennai in 1986. Now, there are an estimated 42 million people living with HIV or AIDS worldwide. This includes about four million people in India. It has spread worldwide threatening all of mankind so much so that it is estimated that 7,000 adults and 500 babies are infected with HIV or AIDS every day. It causes the death of more than three million people every year throughout the world and the cumulative number of deaths due to HIV/AIDS is around 30 million.

HIV stands for Human Immunodeficiency Virus. A person infected with HIV is referred to as a HIV positive person. Only a blood test can establish one's status. HIV causes AIDS; it destroys a type of defence cells in the body called CD₄ helper lymphocyte cells (CD₄ cells). Under normal circumstances these cells help the immune system to function normally and fight-off certain kinds of infections by acting as messengers to other immune system cells telling them to become active and fight against an invading germ. The HIV attached to these CD₄ cells infects them and uses them to multiply resulting in loss of ability of CD₄ cells to do their job of fighting infections. The name for this condition is Acquired Immuno Deficiency Syndrome (AIDS). Because their immune systems are weakened, people who have AIDS are unable to fight-off many infections particularly tuberculosis, pneumonia, meningitis, encephalitis and cancers. AIDS is fatal. It is essential therefore to detect AIDS/HIV at an early stage through blood tests.

An HIV positive person may not necessarily have AIDS. Such a person remains infected for the rest of his life but could remain asymptomatic for about three to 12 years, or longer. The amount of time it takes for the AIDS symptoms to appear varies from person to person. It is possible to infect others with HIV even if the person with the virus has absolutely no symptoms. In a person infected with AIDS symptoms can include extreme weakness or fatigue, rapid weight loss, frequent long fevers, heavy sweating at night, minor infections that cause skin rashes and sores in the mouth, anus or genitals, swollen lymph glands, white spots in the mouth or throat, chronic diarrhoea, loss of memory and consistent cough.

HIV can spread from one infected person to another in the following ways:

- (i) **Unprotected sex:** HIV is transmitted mostly through semen and vaginal fluids during unprotected sex.
- (ii) **Contaminated blood:** HIV can be transmitted through transfusion of blood and blood products.
- (iii) **Using contaminated syringes and needles:** Sharing of syringes and needles among intravenous drug users can transmit HIV and the chances of transmission are the highest via this.
- (iv) **From an infected mother to her baby:** HIV can be transmitted to the baby from an infected mother before birth, during birth and after birth. Breast milk can also transmit HIV infection to the infant.

Chances of infection are highest in blood transfusion (90–95 per cent) followed by prenatal (from mother to baby, 20–40 per cent). While unprotected sex has a low efficacy of 0.1–1 per cent of HIV transmission, yet it contributes the highest infection globally (75 per cent). The efficacy of HIV transmission by different routes is shown in Table 7.5.

Table 7.5 HIV Transmission through Different Routes

Mode of transmission	Percentage of Efficacy	Percentage of Infection (Globally)	Percentage of Infection in India
Unprotected sex	0.1–1.0	75	79
Blood transfusion	90–95	5	7
Prenatal	20–40	10	0.15
Injecting drug use	0.5–1.0	10	6

Mode of transmission	Percentage of Efficacy	Percentage of Infection (Globally)	Percentage of Infection in India
Needle type exposure (health care settings, tattooing needle stick injury and so on)	0.5	0.1	Data not available
Others (not specified)			8

HIV is not transmitted by casual contact such as touching, holding hands, body contacts in crowded places, shaking hands, working or playing together, sharing food vessels and clothes or eating food, cooked or handled by an infected person. HIV/AIDS does not spread by donation of blood, by mosquito or insect bites. Swimming pools and toilet-sharing also are not known to spread HIV infection. HIV has been found in small amounts in body fluids such as saliva, faeces, urine and tears but no evidence has been found that it could spread through these body fluids.

Prevention is the only solution against HIV/AIDS. Awareness and proactive action only can ensure a HIV/AIDS-free society. Some of the protective actions are safe sex (use of condoms), having a faithful monogamous sexual relationship with an uninfected partner, use of sterilized disposable syringes, sterilization of needles, transfusion of unaffected blood and blood products after proper test. Children and adolescents have to be made aware about HIV infection and its mode of transmission before they become sexually active. A tolerant, compassionate and non-discriminatory attitude towards people with HIV infection is very important, as ill-based fear of HIV and AIDS affects the patient's environment adversely. Proper medical care for HIV positive pregnant women can prevent HIV infection to the newborn. Every woman should know about HIV and AIDS to protect herself and her family. According to a World Health Organization estimate, approximately 44 per cent of the 40 million adults living with HIV/AIDS are women. Women are more affected because they are more vulnerable. Moreover, women in India and in most of the countries invariably occupy a subservient status within the family and society which further heightens their vulnerability to infection. In a developing country such as India, HIV affects people in the productive age groups and leads to premature deaths. In most of the families the male member is also the earning member and his death/incapacitation affects the whole family. Besides, no cure for AIDS has been found till date and the medicines used in the treatment are very costly therefore beyond the reach of many people. This severely affects the economic condition of the whole family and in turn the community and the country.

Value Education

Values are one's own beliefs, principles, perceptions, feelings and behaviour to judge what is right or wrong. Value education in the context of a sustainable environment must transmit environmental values, values for nature's bounty, cultures, human heritage, equitable use of resources and common property resources, social justice, protection of environment and so on. Value education must give weightage to sustainability, equitable use of resources, avoiding consumerism, wastefulness and overexploitation of non-renewable natural resources. Environmental values make us understand the importance of conservation of nature and encourage us to look beyond the physical values. Rivers, forests and seas are not to be merely seen as sources of water, wood and fish, respectively. In the years gone by, killing a tiger or other wild animals was considered a profession or a sport, but in current times it is a crime against biodiversity. This is what environmental values and value education teach us.

Till the 18th century, value education remained the core of our education system in institutions and *gurukuls*. In ancient times we were taught ethical and moral values. The economic and technical development of society has now changed the social structure, education system and also shifted the emphasis of to economic and secular values. Presently, value-based education in schools at all levels has again taken the centrestage. The National Resource Centre on Value Education was set up at National Council of Educational Research and Training (NCERT) by the Government of India to cultivate good values in the future citizens of India.

Environmental values are also emphasized in the Constitution of India in the following articles:

Article 51A(g): The constitution expects citizen of the country to 'protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for all living creatures'.

Article 48A: The state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife in the country.

Value education in the context of the environment must teach us the following:

- (i) Environmental values.
- (ii) Values for nature.
- (iii) Values for culture.
- (iv) Values for social justice.
- (v) Values for human heritage.
- (vi) Values for equitable use of resources.
- (vii) Values for sharing common property resources.
- (viii) Values to stop/minimize environmental degradation.

Human Rights

Man gets his sustenance from the environment which in turn is greatly affected by humans. Therefore, human rights and environmental issues are closely interlinked. They are equity in the distribution of environmental resources, utilization of resources, intellectual property rights, tribal people's rights in forest areas and conflicts with wildlife, particularly in protected areas, development, displacement and resettlement issues and accessibility to nutrition and health care to prevent diseases mainly those caused by negligence to the environment.

The foundation of freedom, justice and peace in the world, depends on the recognition of the inherent dignity and equal rights of all members of the human family. The General Assembly of the United Nations, on December 10, 1948 adopted and proclaimed the Universal Declaration of Human Rights which needs to be disseminated, displayed, read and expounded principally in schools and other educational institutions. The full text of the Declaration is appended at the end of the chapter.

In spite of the widening gap between the rich and the poor, components of human rights such as equality and social justice are essential for men and women, irrespective of their caste, creed and nationality. The right to the use of natural resources is a human right. For example, tribal people should have access to fuel woods and forest products for their livelihood and water should be available to the villagers, irrespective of their caste or wealth.

The right to life and thus proper nutrition and health are fundamental human rights. Poverty, hunger, malnutrition and a poorly managed environment affects human health as well as the socio-economic development of the society.

Traditional medicines, complementary and alternative medicines, herbal products, yoga and naturopathy are widely used in our country since ancient times. Now, the western world is taking patents for the same