

ENVIRONMENTAL STUDIES

UNIT-V

HUMAN POPULATION AND ENVIRONMENT

BASIC TERMS&DEFINITIONS

Exponential growth	When a quantity increases by a constant amount per unit time.
Doubling time	The time needed for a population to double its size at a constant annual rate.
Total fertility rate	The average number of children that would be born to a woman in her lifetime if age specific birth rate remains constant.
Infant motility rate	Percentage of infants died out of those born year.
Zero population growth	When birth plus immigration in a population are just equal to deaths plus emigration.
Carrying capacity	Maximum population size that a given system can support over a given time of time.
Contraceptive	Physical and chemical methods used for family planning
Family planning	Planning the time timing , spacing and number of offsprings.
Human rights	Rights that a human being must enjoy on this earth since he\she is a human being .
Life expectancy	Average number of years a new born baby is expected to live.

Population

The word 'population' is derived from the *latin* word "*populus*" which means people. Population is defined as a group of individuals belonging to the same species, which live in a given area at a given time.

Human Population and the Environment:

As the world's population grows, improving living standards without destroying the environment is a global challenge. Due to heavy human population, natural resources are under increasing pressure, threatening public health and development. Water shortages, soil exhaustion, loss of forests, air and water pollution, and degradation of coastlines afflict many areas. Most developed economies currently consume resources much faster than they can regenerate. Most developing countries with rapid population growth face the urgent need to improve living standards.

Environment getting worse

- Because of heavy population, in the past decade in every environmental sector, conditions have either failed to improve, or they are worsening:

Public health:

- Because of heavy population, unclean water, along with poor sanitation, kills over 12 million people each year, most in developing countries.
- Air pollution kills nearly 3 million more. Heavy metals and other contaminants also cause widespread health problems.

Food supply:

- In 64 of 105 developing countries studied by the UN Food and Agriculture Organization, the population has been growing faster than food supplies. Population pressures have degraded some 2 billion hectares of arable land — an area the size of Canada and the U.S.

- **Freshwater:**

The supply of freshwater is finite, but demand is soaring as populations grows and use per capita rises. By 2025, when world population is projected to be 8 billion, 48 countries containing 3 billion people will face shortages.

Coastlines and oceans:

- Half of all coastal ecosystems are pressured by high population densities and urban development. A tide of pollution is rising in the world's seas. Ocean fisheries are being overexploited, and fish catches are down.

Forests:

- Because of heavy population, nearly half of the world's original forest cover has been lost, and each year another 16 million hectares are cut, bulldozed, or burned.

Biodiversity:

- The earth's biological diversity is crucial to the continued vitality of agriculture and medicine — and perhaps even to life on earth itself. Yet human activities are pushing many thousands of plant and animal species into extinction. Two of every three species is estimated to be in decline.

Global climate change:

- The earth's surface is warming due to greenhouse gas emissions, largely from burning fossil fuels. If the global temperature rises as projected, sea levels would rise by several meters, causing widespread flooding. Global warming also could cause droughts and disrupt agriculture.

Toward a livable future

- How people preserve or abuse the environment could largely determine whether living standards improve or deteriorate. Growing human numbers, urban expansion, and resource exploitation do not bode well for the future. Without practicing sustainable development, humanity faces a deteriorating environment and may even invite ecological disaster.

Taking action:

- Many steps toward sustainability can be taken today. These include: using energy more efficiently, managing cities better, phasing out subsidies that encourage waste etc.

Stabilizing population:

- While population growth has slowed, the absolute number of people continues to increase — by about 1 billion every 13 years. Slowing population growth would help improve living standards and would buy time to protect natural resources. In the long run, to sustain higher living standards, world population size must stabilize.

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Population and sustainable development:

According to World Health Organization (WHO), sustainable development is defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs. Now a days sustainable development has become buzz world and hundreds of programmes have been initiated in the name of sustainable development.

- Environmentalists and economists increasingly agree that efforts to protect the environment and to achieve better living standards can be closely linked and are mutually reinforcing.
- Slowing the increase in population, especially in the face of rising per capita demand for natural resources, can take pressure off the environment and buy time to improve living standards on a sustainable basis.
- As population growth slows, countries can invest more in education, health care, job creation, and other improvements that help boost living standards. In turn, as individual income, savings, and investment rise, more resources become available that can boost productivity. This dynamic process has been identified as one of the key reasons that the economies of many Asian countries grew rapidly between 1960 and 1990.

- In recent years fertility has been falling in many developing countries and, as a result, annual world population growth has fallen to about 1.4% in 2000 compared with about 2% in 1960. The UN estimated recently that population is growing by about 78 million per year, down from about 90 million estimated early in the 1990s. Still, at the current pace world population increases by about 1 billion every 13 years. World population surpassed 6 billion in 1999 and is projected to rise to over 8 billion by 2025.
- Globally, fertility has fallen by half since the 1960s, to about three children per woman. In 65 countries, including 9 in the developing world, fertility rates have fallen below replacement level of about two children per woman. Nonetheless, fertility is above replacement level in 123 countries, and in some countries it is substantially above replacement level. In these countries the population continues to increase rapidly. About 1.7 billion people live in 47 countries where the fertility rate averages between three and five children per woman. Another 730 million people live in 44 countries where the average woman has five children or more.
- Almost all population growth is in the developing world. As a result of differences in population growth, Europe's population will decline from 13% to 7% of world population over the next quarter century, while that of sub-Saharan Africa will rise from 10% to 17%. The shares of other regions are projected to remain about the same as today.
- As population and demand for natural resources continue to grow, environmental limits will become increasingly apparent. Many countries could avoid environmental crises if they took steps now to conserve and manage supplies and demand better, while slowing population growth by providing families and individuals with information and services needed to make informed choices about reproductive health.
- Family planning programs play a key role. When family planning information and services are widely available and accessible, couples are better able to achieve their fertility desires. "Even in adverse circumstance — low incomes, limited education, and few opportunities for women — family planning programs have meant slower population growth and improved family welfare," the World Bank has noted.

If every country made a commitment to population stabilization and resource conservation, the world would be better able to meet the challenges of sustainable development. Practicing sustainable development requires a combination of wise public investment, effective natural resource management, cleaner agricultural and industrial technologies, less pollution, and slower population growth.

Population growth & variation among nations:

Population growth is the change in a population over time, and can be quantified as the change in the number of individuals of any species in a population using "per unit time" for measurement. If the population increases by a constant amount per unit time it is called as *linear growth of population*. If the population increases by a fixed percentage it is known as *exponential growth* of population. The time required for a population to double its size at a constant annual rate is known as *doubling time*. For instance, if a nation has 2% annual growth rate of population, its population will double in 35 years. *Total fertility Rates* (TFR) which can be defined as 'the average number of children that would be born to a woman in her lifetime if the age specific birth rates remains constant is one of the key factors for the measurement of a nation's population growth. In addition, the Infant Mortality Rate, which is the percentage of infants died out of those born in a year, is also one of the important parameter affecting future growth of a population.

- Our global human population, 6 billion at present, will cross the 7 billion mark by 2015. The needs of this huge number of human beings cannot be supported by the Earth's natural resources, without degrading the quality of human life.
- Increase in per capita production of agricultural produce at a global level ceased during the 1980s. In some countries, food shortage has become a permanent feature. Two of every three children in South Africa are underweight. In other regions, famines due to drought have become

more frequent. The present development strategies have not been able to successfully address these problems related to hunger and malnutrition. On the other hand, only 15% of the world's population in the developed world is earning 79% of income! Thus, the disparity in the extent of per capita resources that are used by people who live in a 'developed' country as against those who live in a 'developing' country is extremely large. Similarly, the disparity between the rich and the poor in India is also growing.

- The increasing pressures on resources place great demands on the in-built buffering action of nature that has a certain ability to maintain a balance in our environment. However, current development strategies have led to a breakdown of our Earth's ability to replenish the resources on which we depend.

Global population growth

The world population is growing by more than 90 million per year, of which 93% is in developing countries. This will essentially prevent their further economic 'development'. Present projections show that if our population growth is controlled, it will still grow to 7.27 billion by 2015. However, if no action is taken, it will become a staggering 7.92 billion.

Human population growth increased from:

- 1 to 2 billion, in 123 years
- 2 to 3 billion, in 33 years
- 3 to 4 billion, in 14 years
- 4 to 5 billion, in 13 years
- 5 to 6 billion, in 11 years.

It is not the census figures alone that need to be stressed, but an appreciation of this impact on our natural resources. The extent of this depletion is further increased by affluent societies that consume per capita more energy and resources, than less fortunate people. This is of great relevance for developing a new ethic for a more equitable distribution of resources.

In the first half of the 1900s, human numbers were growing rapidly in most developing countries such as India and China. In some African countries the growth was also significant. In contrast, in the developed world population growth had slowed down. It was understood that the global growth rate was depleting the Earth's resources and was a direct impediment to human development. Several environmental ill-effects were linked with the increasing population of the developing world. Poverty alleviation programs failed, as whatever was done was never enough as more and more people had to be supported on Earth's limited resources. In rural areas, population growth has led to increased fragmentation of farmlands and unemployment. In the urban sector, it has led to inadequate housing and an increasing level of air pollution from traffic, water pollution from sewage, and an inability to handle solid waste. By the 1970s, most countries in the developing world had realized that if they had to develop their economics and improve the lives of their citizens they would have to curtail population growth.

Though population growth shows a general global decline, there are variations in the rate of decline in different countries. By the 1990s, the growth rate was decreasing in most countries such as China and India. The decline in the 90s was greatest in India. However, fertility continues to remain high in sub-Saharan African countries.

There are cultural, economic, political and demographic reasons that explain the differences in the rate of population control in different countries. It also varies in different parts of certain countries and is linked with community and/or religious thinking. The lack of Government initiatives for Family Welfare Program (FWP) and limited access to a full range of contraceptive measures are some of the serious impediments to limiting population growth in several countries.

Population Explosion:

India is facing intense problem of population outburst. People are experiencing the crisis such as climate change, shortage of food and also severe energy crisis that are all related to the ever-increasing population. Our civilization is being squeezed between rising population densities. It can be said that if such trends continue, there will be a severe shortage of food supply.

- The government should impose a population control system upon every person living in the country by limiting them to have one child. The eruption of population has affected the standard of living of the people.
- The time has come when future citizens while in educational institutions should understand various issues related to the population problem. It has been observed that in some places, there is a shortage of drinking water. Village people started migrating to cities where they can get some water and employment.
- Today, in some places, people have start fighting for food, water and place to live. The heavy centralization of India's family planning programs often prevents due consideration from being given to regional differences.
- Centralization is encouraged to a large extent by reliance on central government funding. As a result, many of the goals and assumptions of national population control programs do not correspond exactly with local attitudes toward birth control.
- In large part of India, people have strong preference for sons which leads to population growth. They have a feeling that sons will assist with farm labour as they are growing up. Son will also serve as their parent's only security in old age.
- The government should implement program to reduce unplanned pregnancies, lowering fertility rates to the sun replacement levels and also they should try to provide assistance to people. An important family planning program in India is the Project for Community Action in Family Planning. Located in Karnataka, the project operates in 154 project villages and 255 control villages. All project villages are of sufficient size to have a health sub centre, although this advantage is offset by the fact that those villages are the most distant from the area's primary health centres. The project is much assisted by local voluntary groups, such as the women's clubs. The local voluntary groups either provide or secure sites suitable as distribution depots for condoms and birth control pills and also make arrangements for the operation of sterilization camps. Data provided by the Project for Community Action in Family Planning show that important achievements have been realized in the field of population control.
- Population control program is essential because of the energy crisis. If this issue is ignored, it will have dangerous consequences. . Many factors are also directly or indirectly associated with over population. People often experience a shortage of employment opportunities, but they should understand that job opportunity is not related to population. Many young men and women do not get employment according to their education therefore they involve in criminal activities and become drug peddler. Most people are not aware of the fact that the environmental problem is associated with population. Many people believe that there is a strong link between the growing global population and climate change. Resources are limited in the environment and if people keep using them all then there will be crisis for future generation. Others believe that unmanaged population growth could lead to catastrophe because of the Earth's finite resources. Therefore, it can be said that majority of population is concerned about the impact of overpopulation on their lives, the Earth and the future.
- Global warming is also related to overpopulation. To control global warming, population must be controlled. As the population grows, the demand for the consumption of energy such as electricity, cars and other energy resources increases which in turn affects the nature. If population growth is controlled, people can control the ever increasing of burning energy that might hamper their future. Many countries in the world are global warming polluter, contributing greenhouse gas emissions primarily from transportation, industry and power plant

sources. The other thing that people should be concerned about is the infrastructure. All of us should understand that places are getting smaller and smaller as the population grows. Places, which once held beautiful landscape, have been turned into mega complexes to house the increasing number of people.

- Population also affects on the education system. Today, education is very expensive and few people can afford to attend colleges or even high school. The shortage of seats in the colleges and universities are limited and many parents afford to bear the cost of education of more than two children. Hence this is another reason that people should keep smaller families so that they can afford the better facilities for all of them. Over population can cause many problems that people are not aware. Some issues are relating to nature, other relates to crime growth and also less of employment opportunities. Today, many younger generations understand that having few children can help protect the environment. The disparity that lies here is that many younger people feel that they have the right to have as many children they want. Therefore, the only best thing to do in such a case is to better educate them with the merits of smaller family.
- People live a world that has given us an ample of resources to sustain them and it is up to human beings on how they use the same. As the number of people grows, the amount of earth space is reduced. It should be remembered that people live in a world that has three parts water and one part land and if that falls short than they have no other option but to build man made islands to accommodate the ever increasing rise of population. The need to address the family planning scenario has become a very important concern and many countries have joined hand in taking up the matter to educate the general public about the consequences of having a large family. Younger generations today are more concerned about the environment because the way people are continuing, they have no idea what the world will be if the population keeps growing. Therefore, government should impose the law that a family shall not have more than one or two kids so that they can curb the population growth and also save the environment from the misuse of the energy by millions of people. Resources are dying out because human needs are increasing day-by-day. Sea levels are rising due to global warming. People survive on food and water. If stern action is not taken from the government to regulate population control then the country will become unrecognizable slums filled with broken-down housing, bad transportation, and hungry and thirsty people living on the filthy edge of human survival. Population contributes to a vast number of problems however, many countries have adopted family planning which is both successful and unsuccessful but they have managed to put the word across to many about the issues and concerns that they should be aware of and that prevention is better than cure.
- Population growth is an important issue for any country. If better facilities are not provided then many young people take up the path of crime just to sustain themselves and this also becomes a major concern of the government as the inmate population also increase and they have to build various other infrastructure to hold them. However, the major concern regarding over population is that of nature and shortage of food and water. Developing countries like India, Pakistan should take better precaution to curb the increasing number of people as many would think that they might find opportunities in these areas because they are still yet to be developed. The government should therefore be strict with laws to limit over population without hurting the feeling of the general public.

FAMILY WELFARE PROGRAMME

India launched the National Family Welfare Programme in 1951 with the objective of "reducing the birth rate to the extent necessary to stabilise the population at a level consistent with the requirement of the National economy.

"The Family Welfare Programme in India is recognized as a priority area, and is being implemented as a 100% centrally sponsored programme. As per Constitution of India, Family Planning is in the Concurrent list. The approach under the programme during the First and Second Five Year Plans was mainly

"Clinical" under which facilities for provision of services were created. However, on the basis of data brought out by the 1961 census, clinical approach adopted in the first two plans was replaced by "Extension and Education Approach" which envisaged expansion of services facilities along with spread of message of small family norm.

The Governments are concerned with the enormous increase in births and promulgated some rules and regulations to restrict population growth. The following are some of the rules to be followed for family welfare.

1. The marriage age is 18 for Women and 21 for Men
2. Use of family planning techniques is recommended when the couple has 2 children.

Family Planning methods:

Family planning allows couples to decide their family size and also the time spacing of their offspring. Almost every culture in the past used to practice some traditional fertility control methods.

The common family planning methods include:

1. Tubectomy for women (Removal of connection of fallopian tube)
2. Vasectomy (Removal of vase carrying sperm in males)
3. Use of condoms for preventing fertilization during intercourse
4. Announcement of incentives for those who observe family planning and undergo tubectomy and vasectomy
5. Giving publicity to family welfare programmes among rural population and illiterate public.

Advantages of family welfare measures are:

- Restriction of human population
- Increase GDP and productivity
- Better utilization of the natural resources
- Economic development of the nation
- Increase of the average National Income

ENVIRONMENT AND HUMAN HEALTH:

A clean environment is essential for human health and well-being. However, the interactions between the environment and human health are highly complex and difficult to assess. This makes the use of the precautionary principle particularly useful. The best-known health impacts are related to ambient air pollution, poor water quality and insufficient sanitation. Much less is known about the health impacts of hazardous chemicals. Noise is an emerging environment and health issue.

Climate change, depletion of stratospheric ozone, loss of biodiversity, and land degradation can also affect human health.

World Health Organization (WHO) is established by United Nations Organization (UNO) to monitor the health of people and function as a watch dog against infectious diseases and epidemics.

HUMAN RIGHTS:

Human rights are rights inherent to all human beings, whatever our nationality, place of residence, sex, national or ethnic origin, colour, religion, language, or any other status. We are all equally entitled to our human rights without discrimination. These rights are all interrelated, interdependent and indivisible.

Universal human rights are often expressed and guaranteed by law, in the forms of treaties, customary international law, general principles and other sources of international law. International human rights law lays down obligations of Governments to act in certain ways or to refrain from certain acts, in order to promote and protect human rights and fundamental freedoms of individuals or groups.

Human Rights Day is observed by the international community every year on 10 December. It commemorates the day in 1948 the United Nations General Assembly adopted the Universal Declaration of Human Rights.

The Origin of the Human Rights Principles

Human rights are universal and belong to everyone equally. The origin of Principles One and Two is in the 1948 Universal Declaration of Human Rights (UDHR). The aim of this Declaration was to set basic minimum international standards for the protection of the rights and freedoms of the individual. The fundamental nature of these provisions means that they are now widely regarded as forming a foundation of international law. In particular, the principles of the UDHR are considered to be international customary law and do not require signature or ratification by the state to be recognized as a legal standard.

The UDHR is a keystone document, it has been translated into over 3000 languages and dialects. While some principles may not be directly applicable to business, consistency with the declaration is important.

Some of the articles that are proclaimed as essentials to human dignity by the UN are listed hereunder:

Article 1:

- *All Human Beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.*

Article 3:

- *Everyone has the right to life, liberty and security of person.*

Article 4:

- *No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.*

Article 5:

- *No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.*

Article 6:

- *Everyone has the right to recognition everywhere as a person before the law*

Articles 8:

- *Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.*

Article 9:

- *No one shall be subjected to arbitrary arrest, detention or exile.*

Article 12:

- *No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or*

Article 15:

- *Everyone has the right to a nationality.*
- *No one shall be arbitrarily deprived of his nationality nor denied the right to his nationality.*

Article 16:

- *Men and women of full age, without any limitation due to race, nationality or religion, have the right to marry and to found a family. They are entitled to equal rights as to marriage, during marriage and its dissolution.*
- *Marriage shall be entered into only with the free and full consent of the intending spouses.*
- *Family is the natural and fundamental group of the society and is entitled to protection by society and the state.*

Article 18:

- *Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others*

and in the public or private, to manifest his religion or belief in teaching, practice, worship and observance.

Article 19:

- *Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.*

Article 23:

- *Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment.*
- *Everyone, without any discrimination, has the right to equal pay for equal work.*
- *Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.*
- *Everyone has the right to form and to join trade unions for the protection of his interests.*

Article 26:

- *Everyone has the right to education. Education shall be free, atleast in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be generally available and higher education shall be equally accessible to all on the basis of merit.*
- *Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.*
- *Parents have a prior right to choose the kind of education that shall be given to their children.*

VALUE OF EDUCATION

Education is a methodical effort towards learning basic facts about humanity. And the core idea behind value education is to cultivate essential values so that the civilization that teaches us to manage complexities can be sustained and further developed.

Education begins at home and it is continued in schools. Everyone accepts certain things in his/her life through various mediums like society or government.

Value education:

- Value education is important to help everyone in improving the value system that he/she holds and put them to use. Once, everyone has understood their values in life they can examine and control the various choices they make in their life. One has to frequently uphold the various types of values in his life such as cultural values, universal values, personal values and social values.
- Thus, value education is always essential to shape one's life and to give him/her an opportunity of performing himself/herself on the global stage. The need for value education among the parents, children, teachers etc, is constantly increasing as we continue to witness increasing violent activities, behavioral disorder, lack of unity in the society etc.
- The family system in India has a long tradition of imparting value education. But with the progress of modernity and fast changing role of the parents it has not been very easy for the parents to impart relevant values in their wards. Therefore it is essential to conduct various value education programs to address rising problems of the modern society. These programs should concentrate on the development of the children, young adults etc. focusing on areas like happiness, humility, cooperation, honesty, simplicity, love, unity, peace etc.

NCERT, being the apex organization in the area of school education, has been identified as the National Resource Centre for value of education with a view to promoting value orientation of school education at all levels, elementary, secondary and college level. A core group on value education has been formed for the centre. **NRCVE** (The National Resource Centre on Value Education) was set up at NCERT as an outcome of strategic planning to realize the objectives of value-based education in the country. Main objectives of the Centre are to

- Develop plans, programmes and activities for value-orientation of education,
- Design strategies for implementing the plans and programmes,
- Develop education materials and other teaching aids,
- Document and disseminate information,
- Provide extension and consultancy services,
- Serve as a treasure house cum reference library of educational materials.

Realization of these goals and functions is the joint venture of different constituents of the NCERT including the Regional Institutions of Education, Central Institution of Educational Technology and Pandit Sunder Lal Sharma Central Institute of Vocational Education.

Objectives of Value education: The values that can make human life valuable, elevated, successful and beneficial are the life values. These values were born with humanity itself and are eternal, immortal and everlasting. The major objective of value education is to include good values as an individual to lead a life as a responsible future citizen of a feeling of universal BROTHERHOOD.

HIV/AIDS

Acquired immune deficiency syndrome (or) acquired immunodeficiency syndrome (**AIDS**) is a disease of the human immune system caused by the human immunodeficiency virus (**HIV**).

AIDS is the ultimate clinical consequence of infection with HIV. HIV is a retrovirus that primarily infects vital organs of the human immune system such as CD4⁺ T cells (a subset of T cells), macrophages and dendritic cells. It directly and indirectly destroys CD4⁺ T cells.

This condition progressively reduces the effectiveness of the immune system and leaves individuals susceptible to opportunistic infections and tumors.

HIV is transmitted through direct contact of a mucous membrane or the bloodstream with a bodily fluid containing HIV, such as blood, semen, vaginal fluid, pre-seminal fluid, and breast milk.

Origin of HIV/AIDS

Though sufficient knowledge has been gained about AIDS, yet a definite source of this virus could not be identified. But most of the evidences have suggested that the AIDS has spread from Africa. It has been believed that the HIV has transferred to human from African monkey or Chimpanzee.

AIDS was first discovered in 1983 in Africa. But in India, in the year 1986, the first known case of HIV was diagnosed by Dr. Suniti Solmon amongst female sex workers in Chennai. Later that year, sex workers began showing signs of this deadly disease. At that time, foreigners in India were traveling in and out of the country. It is thought that these foreigners were the ones responsible for the first infections. By the next year, about 135 more cases came to light. Among these 14 had already progressed to AIDS. Prevalence in high risk groups reached above 5% by 1990.

Now India has the world's fourth largest population suffering from AIDS. However, the estimated number of human immunodeficiency virus (HIV) infections in India has declined drastically in recent years — from 5.5 million in 2005 to below 2.5 million in 2007. These new figures are supported by the World Health Organization.

The largest number of infected cases has been found in Maharashtra and Tamil Nadu, followed by Delhi, UP, Karnataka and Goa.

MODE OF TRANSMISSION:

HIV is transmitted through direct contact of a mucous membrane or the bloodstream with a bodily fluid containing HIV, such as blood, semen, vaginal fluid, pre-seminal fluid, and breast milk.

HIV transmission can involve

anal, vaginal or oral sex with HIV patients,
 HIV contaminated blood transfusion,
 HIV contaminated hypodermic needles,
 exchange between HIV infected mother and baby during pregnancy, childbirth, breastfeeding or
 other exposure to one of the above bodily fluids

HIV is not spreading by the following activities:

Tears, food and air, cough, handshake, mosquito, flies, insect bites, urine, saliva during normal kissing,
 sharing of utensils, cloths, toilet, bath room etc.

SYMPTOMS

- The symptoms of AIDS are primarily the result of conditions that do not normally develop in individuals with healthy immune systems. Most of these conditions are infections caused by bacteria, viruses, fungi and parasites that are normally controlled by the elements of the immune system that HIV damages.
- Opportunistic infections are common in people with AIDS. These infections affect nearly every organ system
- People with AIDS also have an increased risk of developing various cancers such as Kaposi's sarcoma, cervical cancer and cancers of the immune system known as lymphomas.
- Additionally, people with AIDS often have systemic symptoms of infection like fevers, sweats (particularly at night), swollen glands, chills, weakness, and weight loss. The specific opportunistic infections that AIDS patients develop depend in part on the prevalence of these infections in the geographic area in which the patient lives.
- Pneumocystis pneumonia is relatively rare in healthy, immunocompetent people, but common among HIV-infected individuals.
- Tuberculosis (TB) is unique among infections associated with HIV because it is transmissible to immunocompetent people via the respiratory route, is not easily treatable once identified.
- Gastrointestinal infections are common in HIV infected patients.
- HIV infection may lead to a variety of neuropsychiatric sequelae, either by infection of the now susceptible nervous system by organisms, or as a direct consequence of the illness itself

DIAGNOSIS:

The diagnosis of AIDS in a person infected with HIV is based on the presence of certain signs or symptoms.

ELISA, Tridot Test and PCR are the laboratory tests to confirm AIDS in an infected person. HIV tests are usually performed on venous blood.

Treatment

There is currently no publicly available vaccine for HIV or cure for HIV or AIDS. The only known methods of prevention are based on avoiding exposure to the virus or, failing that, an antiretroviral treatment directly after a highly significant exposure, called post-exposure prophylaxis (PEP). PEP has a very demanding four week schedule of dosage. It also has very unpleasant side effects including diarrhea, malaise, nausea and fatigue

CONTROL AND PREVENTIVE MEASURES OF AIDS

The three main transmission routes of HIV are sexual contact, exposure to infected body fluids or tissues and from mother to fetus or child during perinatal period.

It is possible to find HIV in the saliva, tears, and urine of infected individuals, but there are no recorded cases of infection by these secretions, and the risk of infection is negligible.

Anti-retroviral treatment of infected patients also significantly reduces their ability to transmit HIV to others, by reducing the amount of virus in their bodily fluids to undetectable levels. The Basic approaches to control AIDS are:

1. **Education:** Health education enables people to avoid indiscriminate sex and encourages the use of condoms. One should avoid the use of sharing razors, needles and syringes

2. **Prevention of Blood Borne HIV Transmission:** People in high risk groups should not donate blood. Blood should be screened for HIV before transmission and strict sterilization practices should be followed in Hospitals
3. **Primary Health Care:** AIDS awareness programmes should be encouraged. Voluntary health agencies should participate in large. Training programmes should be conducted to doctors and paramedical workers.
4. **Counseling services:** Counseling services should be provided either in person or through telephone
5. **Drug Treatment:** Testing HIV positive does not mean the end. They can still stay healthy leading productive lives for many years. Seeking regular medical care and staying active are very important in managing HIV.

The immune system has to be kept boosted by taking nutritious diet and maintaining a stress-free mind.

Effects of HIV/AIDS on Society and Economy

HIV and AIDS affects economic growth by reducing the availability of human capital. Without proper nutrition, health care and medicine that is available in developed countries, large numbers of people suffer and die from AIDS-related complications. They will not only be unable to work, but will also require significant medical care.

The forecast is that this will probably cause a collapse of economies and societies in countries with a significant AIDS population. In some heavily infected areas, the epidemic has left behind many orphans cared for by elderly grandparents.

The increased mortality has results in a smaller skilled population and labor force. This smaller labor force consists of increasingly younger people, with reduced knowledge and work experience leading to reduced productivity.

An increase in workers' time off to look after sick family members or for sick leave lowers productivity. Increased mortality reduces the mechanisms that generate human capital and investment in people, through loss of income and the death of parents.

By affecting mainly young adults, AIDS reduces the taxable population, in turn reducing the resources available for public expenditures such as education and health services not related to AIDS resulting in increasing pressure for the state's finances and slower growth of the economy.

Women and Child welfare

A. Women are the backbone of the society and children are the future of the Nation. The relation between women and child welfare is an important factor for the development of any community. The impact of women on children is unparalleled in any other community sector. Both women and child are suffering in a number of ways mainly because they are weak, helpless and economically dependent.

Women Welfare: The main goal of the women welfare is to improve the status of the women by providing opportunities in education, employment and economic independence. Women are facing following problems in our society

- Gender discrimination and devaluation at home, at workplace, in matrimony and in public life is become to common in society
- They are struggling with dowry system, domestic violence, criminal offences, mental and sexual torture
- The human rights of women are dishonored in the male dominated society
- Women are neglected in policy making and decision making process

To overcome all these problems, women need an urgent policy reforms and more strict legislation, education and legal awareness for checking injustice towards her. In addition they require a National strategy with following objectives.

- To provide education
- To impart vocational training
- To generate awareness about the environment
- To improve the employment opportunities
- To restore the dignity, status, equality and respect for women

National Commission for Women: Government of India has started a National Commission for women with following objectives

- To examine constitutional and legal rights for women
- To review existing legislations
- To sensitize the enforcement and administrative machinery to women's

Role of IT in environment and human health

Information technology (IT) is one of the fastest growing recent technologies. IT has tremendous potential in the field of environment education and health as in any other field like business, economics, politics or culture. Various software have been developed for environment and health care which are user friendly and help in better understanding for the topic. A lot of techniques are used under IT for development and application of computational tools to acquire, store, analyze and visualize satellite data which is used for observation, and protection of environment. Due to the development of the internet and information through the satellites a wide database is generated which is the collection of various interrelated articles.

Role of IT in environment:

Technology has played a key role in the development of human society. Modern technologies such as IT have changed the human lifestyle. Development of sophisticated instruments like computers, satellites, telecommunication instruments etc., has resulted in total revolution in almost all spheres of life. The important role of information technology in environment and human health are as follows

- Remote Sensing and GIS (Geographic Information System) provides data and knowledge concerning the global environment as it is used for mapping and monitoring various natural resources.
- Ministry of Environment and Forest (MoEF) and Government of India (GOI) have created an Environment Information System (ENVIS). Different ENVIS centers are set up in different organizations for information collection, storage which work towards boosting the relationship between trade and environment
- IT is used for computer based modeling and simulation of environmental scenarios for analysis and prediction. It enables environmental scientists and researchers around the world to communicate, collaborate and coordinate.
- The occurrence of a number of natural calamities like droughts, floods, volcanic eruptions etc., can also be predicted well in advance through IT. Such assessments help the environmentalists and planners to take necessary steps to minimize the effects of these extreme natural events.

Role of IT in human health

- IT can be used for audio, visual and data communications for medical consultation, diagnosis, treatment, nursing and medical education.
- IT is used for testing of DNA, creating DNA database and genetic information about population. Medical records and finger prints which are used by investigating agencies to identify missing persons and criminals.
- IT helps in spreading awareness about endemic, epidemic and communicable diseases. With the help of Remote Sensing and GIS (Geographic Information System) there is identification of several infested areas which are prone to some diseases like malaria etc. based upon mapping of such areas.

Many hospitals now, take on-line help of experts to provide better treatment and services to their patients. This has become possible only because of advancement of IT in the recent times.

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UNIT –V

1. Explain the population variation among nations based on age structure?
2. What is meant by population explosion ? Discuss the Indian scenario?
3. Discuss the silent features of Draft Declaration of Human Rights and Environment?
4. What are the objectives and elements of value education?
5. Briefly discuss HIV/AIDS, mode of its spread and its effects on environment?
6. Discuss various issues and measures for women and child welfare at international and national level?
7. Discuss family welfare and family planning programmes in India ?
8. Describe the Role of IT in environment and human health?