

Concept of Health and Disease

Total Competencies: 10

LEQs: 2

SAQs: 23

SEQs: 13

MCQs: 20

➔ **CM 1.1:** Define and describe the concept of public health.

1. Enumerate the changing concepts of health. Describe the ecological concept of health. (SEQ) (2+3)
2. What is the biomedical concept of health? (SAQ) (3)

Answer

Health is not perceived the same way by all members of a community including various professional groups giving rise to confusion about the concept of health. In a world of continuous change, new concepts are bound to emerge based on new patterns of thought. A brief account of the changing concepts of health is given in Fig. 1.1.

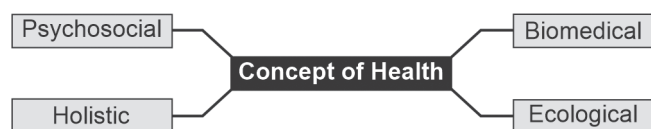


Fig 1.1: Concept of health

Biomedical Concept

This concept, known as the “biomedical concept” has the basis in the “germ theory of disease” which dominated during the 20th century. However, this concept did not include the role of the environmental, social, psychological and cultural determinants of health. The biomedical model, for all its spectacular success in treating disease, was found inadequate to solve some of the major health problems, e.g. malnutrition, chronic diseases, accidents, drug abuse, mental illness, environmental pollution and population explosion.

Ecological Concept

The ecologists put forward an attractive hypothesis which viewed health as a dynamic equilibrium between

man and his environment, and disease as a mal-adjustment of the human organism to the environment.

Psychosocial Concept

It was further revealed that health is not only a biomedical phenomenon, but one which is influenced by socio-cultural, psychological, economic and political factors of the people concerned. These factors must be taken into consideration in defining and measuring health. Thus, health is both a biological and social phenomenon.

Holistic Concept

The holistic model is a synthesis of all the above concepts. It recognizes the strength of social, economic, political and environmental influences on health. It has been variously described as a unified or multidimensional process involving the well-being of the whole person in the context of his environment. The holistic approach implies that all sectors of society influence health agriculture, animal husbandry, food, industry, education, housing, public works, communications, and other sectors. The emphasis is on the promotion and protection of health.

➔ **CM 1.2:** Define health and describe the concept of holistic health including the concept of spiritual health and the relativeness and determinants of health.

1. Define health. Enlist the different dimensions of health. Add a note on the mental dimension of health. (SEQ) (1+3+1)

Answer

Health is defined as a state of complete physical, mental and social well-being of an individual and not merely an absence of disease or infirmity and the ability to lead a socially and economically productive life. The different dimensions of health are given in Fig. 1.2.

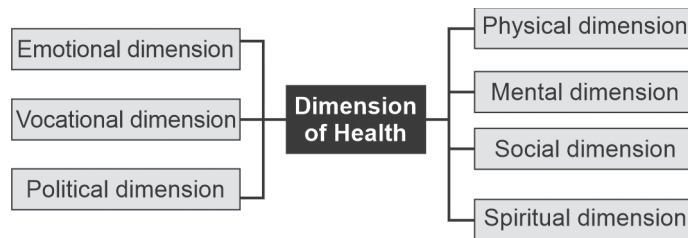


Fig. 1.2: Dimensions of health

Mental Dimension

A person is said to be mentally healthy, when he/she has a perfect state of balance with the surrounding world, has harmonious relations with others, the intelligence, memory, learning capacity and judgment are normal, not have any internal conflicts, accepts criticism sportively, has got good self-control emotionally, solves the problems intelligently, has full self-confidence, is well adjusted with others and is satisfied with what he possesses. He is cheerful and calm. The mental health of an individual can be assessed by his behaviour and attitude.

2. Describe the various determinants of health. (SEQ) (5)

Answer

There are many factors that determine the health of an individual. Some are inside the body (intrinsic factors) and others are outside (extrinsic factors). The interaction of these factors may either promote or deteriorate health. Thus, health is multifactorial. The important determinants are shown in Fig. 1.3.

Biological Determinants of Health

The health of the human being is to some extent determined by the genetic constitution that takes place at the time of conception. Once the constitution of the genes takes place, it is permanent and it cannot be altered. If the constitution of the genes is defective, it results in certain diseases, which are transmitted by heredity such as sickle cell anaemia or mental retardation. There is no treatment for genetic diseases. However, it can be prevented to some extent by genetic counselling to the couples before marriage.

Environmental Determinants of Health

The internal environment is constituted by various organs and systems of the body. The external (macro) environment is made up of physical, biological and social environments. Any disturbance either in the internal or external environment, disturbs the health of an individual. According to ecology, health is a state of dynamic equilibrium between the human being and the environment.

Behavioural and Socio-Cultural Determinants

This denotes 'health-behaviour' of persons. This includes cultural patterns, social values, and behavioural habits (e.g. smoking, alcoholism). Many diseases have shown a strong association with certain lifestyles such as coronary heart disease, obesity, and lung cancer. Therefore, persons having these risk factors/habits are considered at-risk groups. These lifestyles are developed through processes of socialization and social interaction with parents, friends, and peer groups. However, not all lifestyle factors are harmful. Many lifestyles promote health, e.g. adequate nutrition, yoga exercises, meditation, enough sleep, etc.

Socio-Economic Conditions

The important socio-economic factors influencing health are education, occupation and income of the individual.

- ✦ **Education:** It has been observed that illiteracy is associated with increased morbidity and mortality, especially female literacy level is very important in promoting health.
- ✦ **Occupation:** It has also been observed that morbidity and mortality are more among the unemployed than the employed persons. The unemployment problem itself causes psychological and social damage.
- ✦ **Income:** This is the most important 'key' factor, which determines the standard of living, quality of life and thus the health status of the individual and community at large. Diseases of the poor socio-economic status are malnutrition, tuberculosis, leprosy, gastroenteritis, worm infestation, etc. and the diseases of the affluent society are obesity, hypertension, coronary artery disease, diabetes, etc.

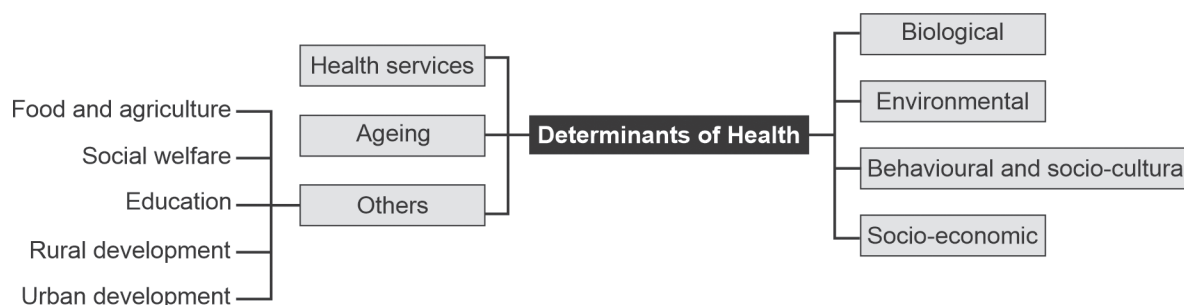


Fig. 1.3: Determinants of health

Health Services

The availability of health care services such as immunization services, family welfare services, nutritional services, educational services, etc. not only prevents diseases but also promotes health and prolongs the life of the people, which in turn is essential for the social and economic development of the country.

Ageing of the Population

Even though health services prolong the lives of people, the ageing of the population itself is a matter of concern because chronic diseases and disabilities accompany the ageing process.

Other Factors

The services from the health-related departments like food and agriculture, social welfare, education, rural development, urban development, etc. are the other contributory factors for improving the standards of living. Their services are provision of protected water supply, good roads, lighting, etc. This is called inter-sectoral coordination.

3. Describe the quality of life with a note on PQLI and HDI. (SEQ) (1+2+2)

Answer

Quality of life was defined by WHO as, "the condition of life resulting from the combination of the effect of the complete range of factors such as those determining health, happiness, education, social and intellectual attainments, freedom of action, justice and freedom of expression".

Physical Quality of Life Index (PQLI)

- ✦ Physical quality of life index which consolidates three indicators: Infant mortality rate, life expectancy at age one and literacy level.
- ✦ This indicator PQLI is used for national and international comparison of human well-being.
- ✦ For each component, the performance of the individual countries is placed on a scale of 0 to 100, where '0' represents the 'worst' performance and 100 represents 'best' performance and 50 represents 'average'. The ultimate objective is to attain a PQLI of 100.
- ✦ PQLI does not depend upon per capita GNP, unlike standard of living, showing thereby that 'money is not everything. PQLI does not measure the economic growth of a country but it measures the results of social, economic and political policies, e.g. Middle East oil-rich countries with high per capita income have low PQLI whereas Sri Lanka and Kerala with low per capita income have high PQLI.

Human Development Index (HDI)

- ✦ HDI is a composite index consisting of:
 - Life expectancy at birth
 - Education
 - Standard of living
- ✦ These three are the basic dimensions of human development.
- ✦ The concept of HDI reflects achievements in the most basic human capabilities, viz. leading a long life, being knowledgeable and enjoying a decent standard of living.
- ✦ The HDI values range between 0 to 1.
- ✦ The HDI value for a country shows the distance that it has already travelled towards the maximum possible value of 1 and also allows comparisons with other countries.
- ✦ Most developed countries have HDI scores above 0.8 and least developed countries have HDI scores below 0.55. India comes in medium HDI grade with a score of 0.633 (Table 1.1)

Table 1.1: Classification of HDI

HDI	Grade
0.8–1.0	Very high
0.7–0.79	High
0.55–0.7	Medium
<0.55	Low

Steps to Estimate the HDI

Step 1. Creating the dimension indices

- ✦ Minimum and maximum values (goal posts) are set in order to transform the indicators into indices between 0 and 1 (Table 1.2).

Table 1.2: Goalposts for HDI

Dimension	Observed maximum	Minimum
Life expectancy	83.2	20.0
Mean years of schooling	13.2	0
Expected years of schooling	20.6	0
Combined education index	0.951	0
Per capita income	1,08,211	163

Having defined the minimum and maximum values, the sub-indices are calculated as follows:

$$\text{Dimension index} = \frac{\text{Actual value} - \text{Minimum value}}{\text{Maximum value} - \text{Minimum value}}$$

Step 2. Aggregating the sub-indices to produce the human development index (HDI). The HDI is the geometric mean of the three dimension indices:

$$\left(I_{\text{Life}}^{1/3} \times I_{\text{Education}}^{1/3} \times I_{\text{Income}}^{1/3} \right)$$

The construction of the HDI methodology can be demonstrated using the example of India for the year 2015:

- ✦ Life expectancy at birth (years): 68.3
- ✦ Mean years of schooling (years): 6.3
- ✦ Expected years of schooling (years): 11.7
- ✦ GNI per capita (PPP \$): 5,663

The indices for each component are calculated as follows:

- ✦ Life expectancy index = $(68.3 - 20) / (83.2 - 20) = 48.3 / 63.2 = 0.764$
- ✦ Mean years of schooling index = $(6.3 - 0) / (13.2 - 0) = 0.477$
- ✦ Expected years of schooling index = $(11.7 - 0) / (20.6 - 0) = 0.568$
- ✦ Education index = $(0.477 \times 0.568) = 0.547$
- ✦ Income index = $(5,663 - 163) / (108,211 - 163) = 0.546$

Finally, the HDI is calculated as:

$$\text{HDI} = \sqrt[3]{(0.764 \times 0.547 \times 0.546)} = 0.611$$

4. What is positive health? (SAQ) (3)

Answer

- ✦ The state of positive health implies the notion of "perfect functioning" of the body and mind.
- ✦ Biologically as a state in which every cell and every organ is functioning at optimum capacity and in perfect harmony with the rest of the body.
- ✦ Psychologically, as a state in which the individual feels a sense of perfect well-being and mastery over his environment.
- ✦ Socially, as a state in which the individual's capacities for participation in the social system are optimal.
- ✦ However, the concept of perfect positive health is very challenging to achieve as Health is a dynamic process, subject to continuous change.

5. Explain in brief about the spectrum of health.

(SAQ) (3)

Answer

The health of an individual is a dynamic process. Various attributes are shown in Fig. 1.4.

- ✦ At any given point of time, the health of an individual changes in a range of spectrum varying from the highest point of positive health to the lowest point of death.
- ✦ The transition of health from one level to another level is so gradual that it is very difficult to say when one level ends and the other level begins.
- ✦ It is only in acute cases, under exceptional conditions, there is a sudden decline from the state of positive health to the state of death.

- ✦ An attempt to attain the state of positive health indicates an improvement in the quality of life.

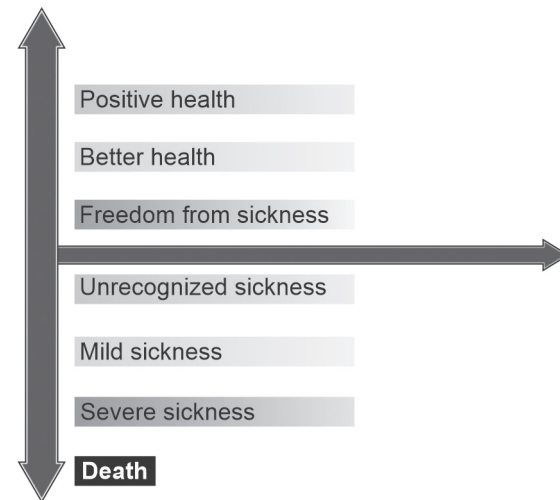


Fig. 1.4: Spectrum of health

➤ **CM 1.3:** Describe the characteristics of the agent, host and environmental factors in health and disease and the multifactorial aetiology of disease.

1. Write in detail about agent, host and environmental factors in health and disease. (SEQ) (5)

Answer

For any person to be healthy, the three components of the epidemiological triad namely agent, host and environment need to be in equilibrium. As long as there is equilibrium among these three interacting factors, the person will be healthy. Once the equilibrium is disturbed, the disease process starts. Depending upon the interaction, there may be development of either one case or an epidemic.

Agent Factors

A disease 'agent' is defined as a substance, living or non-living or a force, whose presence or relative lack of which initiates the disease process (Fig. 1.5). The disease agents are broadly classified into the following groups:

1. Physical agents: Heat, cold, radiation, noise, atmospheric pressure, humidity, etc.
2. Chemical agents:
 - ✦ Endogenous factors: Urea, uric acid, bilirubin, ketones, etc.
 - ✦ Exogenous factors: Dust, gas, fumes, metals, allergens, etc.
3. Biological agents: Viruses, bacteria, rickettsiae, fungi, helminths, protozoa, arthropods, etc.
4. Mechanical agents: Friction, force, injury, sprain, accidents, etc.
5. Nutritional agents: Macro/micronutrients excess or deficiency of which results in disease.

Agent factors
• Physical
• Chemical
• Biological
• Mechanical
• Nutritional

Fig. 1.5: Agent factors in health and disease

Host Factors (Refer to Fig. 1.6)

1. Age: Certain diseases are peculiar in certain age groups, e.g. measles and diphtheria among children, hypertension and diabetes among middle-aged.
2. Sex: Certain diseases like lung cancer and coronary heart disease are common among men and rheumatoid arthritis, hyperthyroidism, diabetes, obesity are common among women. Diseases of the prostate occur only among men and toxemia of pregnancy only among women.
3. Ethnicity: Few diseases are specific to a few regions, e.g. thalassemia is common among people of mediterranean region.
4. Occupation: This not only determines the income but also the health hazards arising out of the occupation, e.g. pneumoconiosis.
5. Literacy level: Higher the literacy level, lower is the incidence of the disease.
6. Income: This is the key factor determining the standard of living and influencing the development of the disease.
7. Marital status: STDs and HIV are more common among unmarried than married persons.
8. Nutritional status: Poor nutritional status makes a person more vulnerable to infectious diseases.
9. Lifestyle factors: Smoking, alcoholism, drug-abuse, lack of exercise, multiple sexual partnership, etc. favour the development of diseases.

Host factors
• Age
• Sex
• Ethnicity
• Occupation
• Literacy level
• Income
• Marital status
• Nutritional status
• Lifestyle factors

Fig. 1.6: Host factors in health and disease

Environmental Factors

These are classified into physical, biological, and socio-cultural environments.

1. Physical environment: Air, water, soil, food, etc.
2. Biological environment: Plants, animals, insects, rodents, microbes, etc.
3. Psychosocial environment: Psychosocial factors like exposure to stressful situations that produce feelings of anxiety, tension, anger, depression, frustration, etc. predisposing to diseases like hypertension, headache, duodenal ulcer, bronchial asthma, mental illness, etc. Cultural practices such as customs, beliefs, cooking and feeding/eating practices, etc. also have an influence on the health of the people in the community.

2. **Enumerate the various concepts of causation of disease. Write in detail about the multifactorial aetiology of the disease. (SEQ) (2+3)**

Answer

Various concepts of causation of disease are:

- ✦ Supernatural theory of disease
- ✦ Theory of imbalance of Tridoshas
- ✦ Theory of imbalance of Yin and Yang
- ✦ Germ theory of disease
- ✦ Concept of epidemiological triad
- ✦ Multifactorial causation of disease
- ✦ Web of causation

Multifactorial Causation of Disease

- ✦ Pettenkofer of Munich proposed this theory of multifactorial causation of disease
- ✦ This theory deemphasizes the 'germ theory'.
- ✦ It is now known that diseases such as coronary heart disease and cancer are due to multiple factors such as excess fat intake, smoking, lack of physical exercise and obesity which are all involved in the pathogenesis of coronary heart disease. Most of these factors are linked to lifestyle and human behaviour.
- ✦ This new model includes all facets of the communicable disease model, and to make it more relevant and useful regarding today's diseases, conditions, disorders, defects, injuries, and deaths; it also reflects the causes of current illnesses and conditions.
- ✦ Behaviour, lifestyle factors, environmental causes, ecologic elements, physical factors, and chronic diseases must also be considered (Fig. 1.7).
- ✦ The term agent is replaced by causative factors which implies the need to identify multiple causes or etiologic factors of disease, disability, injury, and death.
- ✦ The purpose of knowing the multiple factors of disease is to quantify and arrange them in a priority sequence to prevent or control disease.

- ✦ The multifactorial concept offers multiple approaches for the prevention/control of disease.

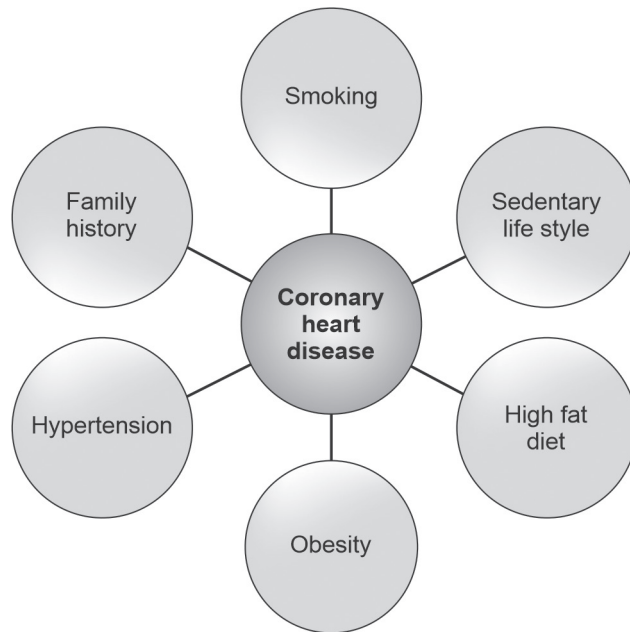


Fig. 1.7: Multifactorial causation of disease

3. Describe the web of causation of disease with a suitable example. (SEQ) (5)

Answer

Web of causation model of disease causation was suggested by McMahon and Pugh. It is ideally suitable in the study of chronic diseases, where the disease agent is often not known, but is the outcome of the interaction of multiple factors.

- ✦ The web of causation considers all the predisposing factors of any type and their complex interrelationship with each other.
- ✦ The web of causation does not imply that the disease cannot be controlled unless all the multiple causes or chains of causation or at least a few of them are appropriately controlled or removed. This is not the case. Sometimes removal or elimination of just one link or chain may be sufficient to control disease if the link is sufficiently important in the pathogenetic process.
- ✦ In a multifactorial event, therefore, individual factors are by no means all of equal weight. The relative importance of these factors may be expressed in terms of relative risk.
- ✦ This can be explained with the example of the causal web of myocardial infarction which is illustrated in Fig. 1.8. It shows various causes and risk factors interlinked with each other ultimately leading to the occurrence of myocardial infarction. It also shows a variety of possible interventions that could be taken to reduce or prevent the occurrence of myocardial infarction.

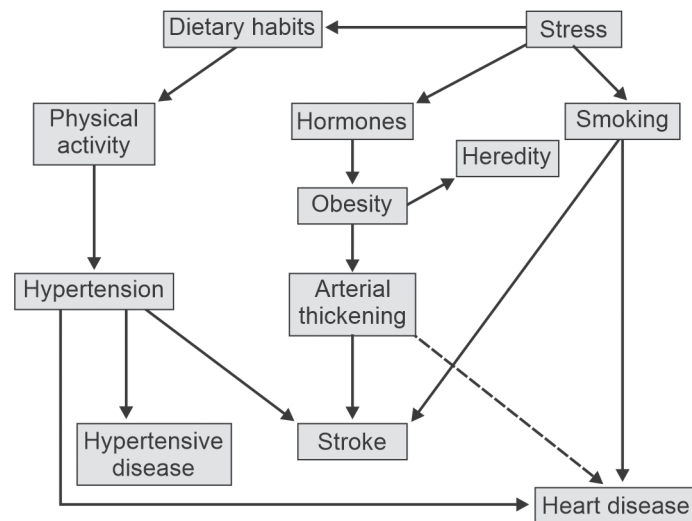


Fig. 1.8: Web of causation of disease

4. What is an epidemiological triad? (SAQ) (3)

Answer

An epidemiological triad or an ecological triad is one of the models of disease causation (Fig. 1.9). According to this model disease occurs when the equilibrium between agent, host and environment is disturbed. Thus, this model explains that some persons do not suffer from the disease even though they harbour the pathogens because an equilibrium is established between the causative agent and the host. It is helpful for illustrating the reciprocal relationships among the agent, host, environment, and time in the study of infectious diseases and epidemics. The three components of the epidemiological triad namely agent, host and environment, each represent the three angles of a triangle.



Fig. 1.9: Epidemiological triad

5. What is the triangle of epidemiology and advanced model of triangle of epidemiology? (SAQ) (1.5 + 1.5)

Answer

Triangle of epidemiology is based on the communicable disease model. It is useful in showing the interaction and interdependence of agent, host, environment, and time as used in the investigation of diseases and epidemics (Fig. 1.10).

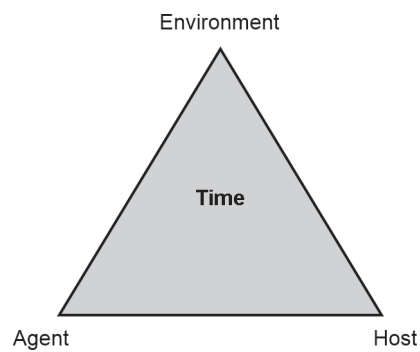


Fig. 1.10: Triangle of epidemiology

Advanced Model of Triangle of Epidemiology

This new model includes all facets of the triangle of epidemiology model and also reflects the causes of current illnesses and conditions (Fig. 1.11). Thus it is more relevant with regard to today's diseases, conditions, disorders, defects, injuries, and deaths. Here the term agent is replaced by causative factors, which implies the need to identify multiple causes or etiologic factors of disease, disability, injury and death. Behaviour, lifestyle factors, environmental causes, ecologic elements, physical factors, and chronic diseases are all taken into account.

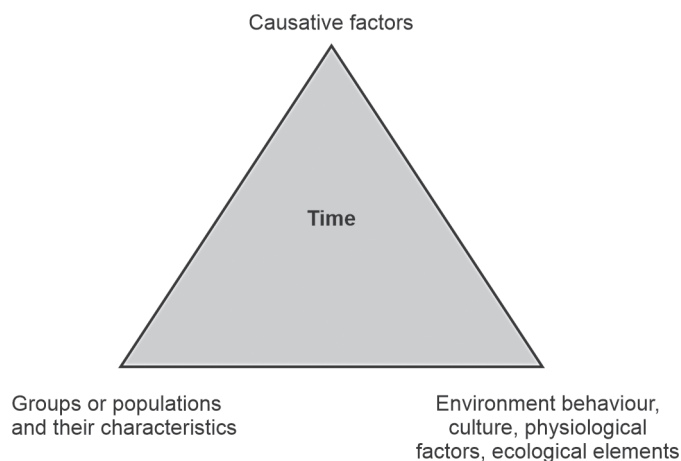


Fig. 1.11: Advanced model of triangle of epidemiology

➡ **CM 1.4:** Describe and discuss the natural history of the disease.

1. Describe the concept of the natural history of disease using an illustration. (LEQ) (10)

Answer

The term natural history of disease is a key concept in epidemiology, which signifies how a disease evolves from the earliest stage of its pre-pathogenesis phase to its termination as recovery, disability or death in the absence of any intervention (Fig. 1.12). Each disease has its unique natural history, which is not necessarily the same in all individuals. It differs from disease to disease and from person to person.

- ✦ The epidemiologist, by studying the natural history of disease in the community setting, is in a unique position to fill the gaps in knowledge about the natural history of disease.
- ✦ It is a necessary framework to understand the pathogenetic chain of events for a particular disease, and for the application of preventive measures.
- ✦ The natural history of the disease consists of two phases: Pre-Pathogenesis phase, i.e. the process in the environment and the pathogenesis phase, i.e. the process in man.

Pre-Pathogenesis Phase

- ✦ This refers to the period preliminary to the onset of disease in man.
- ✦ The disease agent has not yet entered man, but the factors which favour its interaction with the human host are already existing in the environment.
- ✦ This situation is frequently referred to as "man exposed to the risk of disease"
- ✦ Potentially we are all in the pre-pathogenesis phase of many diseases, both communicable and non-communicable.
- ✦ The causative factors of disease may be classified as agent, host and environment.
- ✦ The agent, host and environment operating in combination determine the onset of disease which may range from a single case or occurrence of an epidemic (agent, host and environmental factors as explained under CM 1.3, Q No. 2).

Pathogenesis Phase

- ✦ The pathogenesis phase begins with the entry of the disease "agent" in the susceptible human host.
- ✦ The further events in the pathogenesis phase are clear-cut in infectious diseases, i.e. the disease agent multiplies and induces tissue and physiological changes, and the disease progresses through a period of incubation and later through early and late pathogenesis. The final outcome of the disease may be recovery, disability or death.
- ✦ The pathogenesis phase may be modified by intervention measures such as immunization and chemotherapy.
- ✦ The infection may be clinical or subclinical; typical or atypical or the host may become a carrier with or without having developed clinical disease as in the case of diphtheria and hepatitis B.
- ✦ In chronic diseases, the early pathogenesis phase is less dramatic. This phase in chronic diseases is referred to as the pre-symptomatic phase. The clinical stage begins when recognizable signs or symptoms appear. By the time signs and symptoms appear, the disease phase is already well advanced into the late pathogenesis phase.

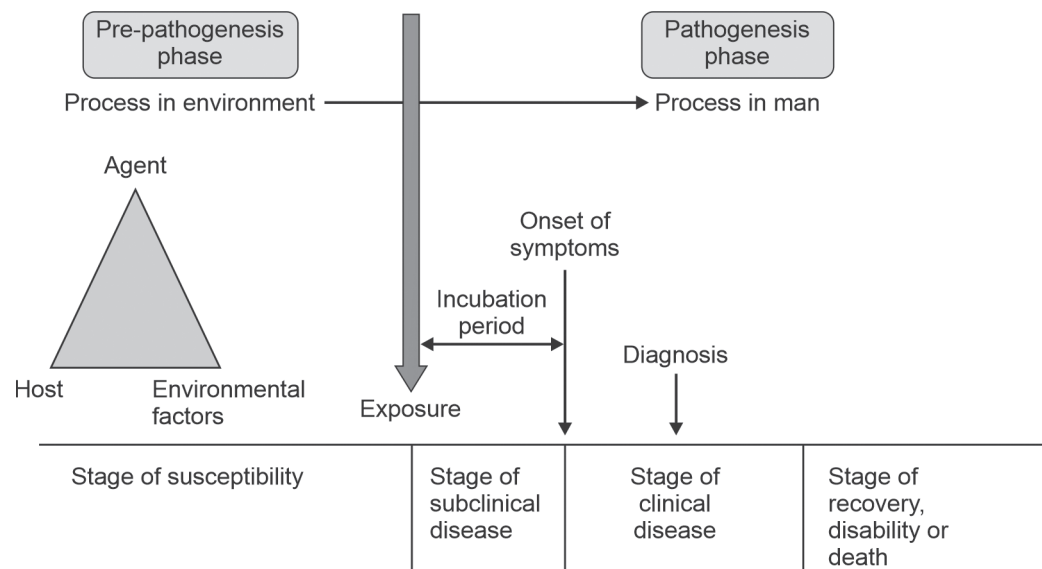


Fig. 1.12: A schematic diagram of the natural history of disease

2. Describe the iceberg phenomenon of disease with a suitable example. (SAQ) (3)

Answer

According to this concept, the disease in the community is compared to an iceberg.

When a piece of ice is allowed to float on water, a small portion is visible and a major portion is submerged in the water. The visible tip of ice is compared to clinical cases, that the physician sees in the community. The major submerged portion of ice corresponds to the hidden mass of unrecognized diseases such as latent cases, apparent carriers, and asymptomatic and undiagnosed cases in the community which are all responsible for the constant prevalence of the disease in the community (Fig. 1.13).

In some diseases like hypertension, diabetes, anaemia, malnutrition, mental illness, etc. the unknown morbidity is more than the known morbidity in the community and constitutes an important, undiagnosed reservoir of disease in the community.

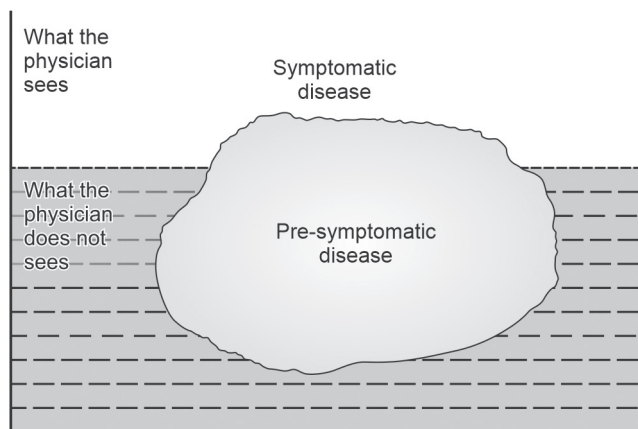


Fig. 1.13: Iceberg phenomenon of disease

3. Define a risk factor. Give appropriate examples.

(SAQ) (3)

Answer

A risk factor is defined as an attribute, which may or may not be modifiable, which has a potential value as a predictor for unfavourable outcomes such as disease, disability, or death but often absolute proof is lacking (Fig. 1.14). Smoking is a risk factor for lung cancer. Smoking does not imply that lung cancer will occur and, in its absence, the disease will not occur. This risk factor can be modified by intervention or eliminated, thereby reducing the possibility of the occurrence of disease. Some of the important diseases and their risk factors are shown in Table 1.3.

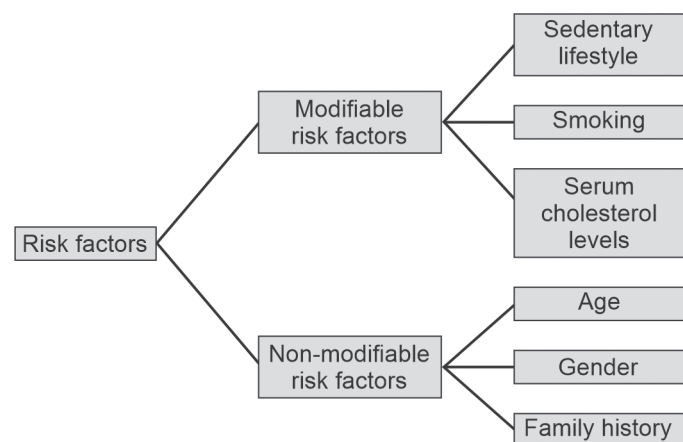


Fig. 1.14: Classification of risk factors

Table 1.3: Important diseases and their risk factors

Disease	Risk factors
Heart disease	Smoking, high BP, high serum cholesterol, diabetes, obesity, lack of physical activity, Type A personality, family history

(Contd...)

Table 1.3: Important diseases and their risk factors (Contd...)

Disease	Risk factors
Cancer	Smoking, alcohol, radiation exposure, pollution, medications, infectious agents, dietary factors, occupational exposure
Stroke	High BP, smoking, elevated cholesterol
Motor vehicle accidents	Speed, alcohol, not using seat belts, or helmets, improper roads, faulty vehicles
Diabetes	Obesity, diet, family history, sedentary lifestyle

➤ **CM 1.5:** Describe the application of interventions at various levels of prevention

1. Describe various levels of prevention with appropriate examples. (SEQ) (3+2)

Answer

The various levels of disease prevention are:

Primordial Prevention

This consists of the elimination or modification of risk factors of the disease. In chronic, non-communicable diseases, such as obesity, hypertension, diabetes, cancer, coronary artery disease, etc. the etiological agent is not known and the etiology is discussed in terms of 'risk factors.' They may act as contributory factors. There are two approaches for primordial prevention—population (mass) strategy and high-risk strategy, e.g. regular exercise and healthy diet among children to prevent the development of risk factors for chronic diseases such as hypertension and obesity.

Primary Prevention

This is the measure undertaken in the period of pre-pathogenesis which removes the possibility of occurrence of the disease. It is important in those diseases, for which no treatment is available, e.g. AIDS, cancer, rabies, caries tooth, etc. Primary prevention involves measures designed to promote general health and well-being, and quality of life or by specific protective measures. Primary prevention consists of the concept of positive health.

Primary prevention can be adopted by two modes of intervention, namely health promotion and specific protection, e.g. health education on personal and oral hygiene, and wearing helmets while driving.

Secondary Prevention

This is the measure undertaken in the early stage, after the onset of the disease or even much before the development of permanent pathology in the individual. It is the action which halts the progress of disease at its incipient stage and prevents complications. The intervention is by early diagnosis and treatment. This

can be done by various screening procedures. Secondary prevention is largely a domain of clinical medicine. The health programs initiated by the government are at the level of secondary prevention. Secondary prevention is an imperfect tool in the control of disease transmission. It is more expensive and less effective than primary prevention, e.g. pap smear test for cancer cervix, and screening of blood donors for HIV and HBV.

Tertiary Prevention

This is the measure undertaken when the disease process is sufficiently advanced beyond its early stages. It signifies intervention in the late pathogenesis phase.

Tertiary prevention can be adopted by two modes of intervention—disability limitation and rehabilitation. treatment even if undertaken late in the natural history of the disease may prevent sequelae and limit disability. Once the defect and disability are stabilized rehabilitation plays a preventable role, e.g. hearing aid, reconstruction surgery following leprosy.

2. Describe the modes of intervention with suitable examples. (SEQ) (5)

Answer

In primordial prevention, the modes of intervention are population strategy and high-risk strategy

- ✦ **Population strategy:** This is directed at the whole population, irrespective of individual risk level. This approach is directed towards changes in the lifestyle of the population by health education from childhood itself. The results of these measures cannot be perceived immediately but are seen after several years, e.g. health education on healthy habits, exercise, and diet.
- ✦ **High-risk strategy:** This is directed to those individuals, who are at high-risk of getting the disease. These high-risk groups can be detected by screening, e.g. identifying children with a family history of cardiovascular diseases and developing healthy habits among them.

In primary prevention: The modes of intervention are health promotion and specific protection

- ✦ **Health promotion:** This consists of 'general measures', which will strengthen the individual/host and prevent the occurrence of the disease by interrupting the interaction among the three factors of the epidemiological triad. The various measures of health promotion are health education on oral hygiene or nutrition.
- ✦ **Specific protection:** This consists of 'specific measures', which prevents specific diseases. They may target specific populations, e.g. masks against pneumoconiosis, vaccines to protect against diseases, and ear plugs against noise-induced deafness.

In secondary prevention: The modes of prevention are early diagnosis and treatment

- ✦ Early diagnosis is the detection of disturbances of homeostatic and compensatory mechanisms while the changes are still reversible.
- ✦ Early diagnosis and treatment help in recovery from the disease, reducing the duration of illness and suffering. It prevents the development of complications and the spread of the diseases thus it prevents or postpones the death of the individual, e.g. self-examination of breasts by women for early signs of breast cancer, mass treatment for trachoma and filariasis.

In tertiary prevention, the two modes of intervention are disability limitation and rehabilitation.

- ✦ Disability limitation means limiting the development of further disability in the individual by giving treatment when the patient comes into the advanced stage of the disease. The objective is to prevent the transition from impairment to handicap, e.g. limiting blurring of vision and night blindness due to vitamin A deficiency, limiting the development of hand and foot deformities in leprosy patients.
- ✦ Rehabilitation is the combined and coordinated use of physical, social, vocational and psychological measures for training and retraining the individual to the highest possible level of functional ability, so that the individual becomes useful to himself, the family and the community at large.
- ✦ The purpose of rehabilitation is to make productive people out of non-productive people, e.g. establishing schools for the blind, reconstructive surgery for leprosy, and graded exercises in neurological disorders.
- ✦ Various modes of intervention and their strategy are displayed in Fig. 1.15.

3. Mention the levels of prevention and modes of intervention in coronary artery disease. (SEQ) (5)

Answer

Levels of prevention and modes of intervention in coronary artery disease are shown in Table 1.4.

Table 1.4: Levels of prevention and mode of intervention in coronary artery disease

Levels of prevention	Mode of intervention
1. Primordial prevention Prevention of development of cardiovascular risk factors	Population strategy - Health education from childhood and development of healthy habits like diet, exercise, avoiding smoking and alcohol, etc. High-risk strategy - Identify children and adolescents with a family history of cardiovascular diseases and develop healthy habits among them.
2. Primary prevention Action taken before the onset of disease, which removes the possibility that a disease will ever occur	Health promotion - Encourage healthy diet - Regular exercise Specific protection - Avoid smoking - Reduce salt intake - Avoid excessive alcohol intake - Avoid a sedentary lifestyle
3. Secondary prevention Action which halts the progress of disease at its incipient stage and prevents complications	Early diagnosis - Screening tests - Regular health check-ups and BP monitoring Adequate treatment - Once the patient is diagnosed with CAD he must be advised to adhere to treatment and regular follow-up visits must be done to review the progress
4. Tertiary prevention Reduce the damage/impact of complications	Disability limitation and rehabilitation If a patient comes with complications of CAD, then -coronary angioplasty, stent, pacemakers, defibrillators, etc.

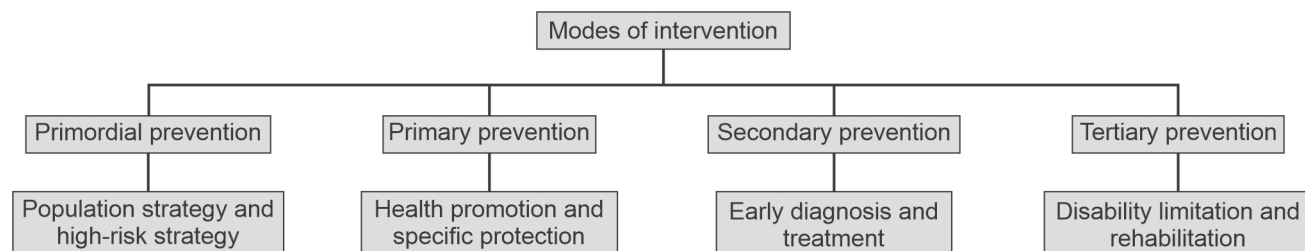


Fig. 1.15: Levels of prevention and modes of interventions

4. Define rehabilitation. Add a note on impairment, disability, and handicap. (SEQ) (2+1+1+1)

Answer

Rehabilitation is defined as the combined and coordinated use of physical, social, vocational, and psychological measures for training and retraining the individual to the highest possible level of functional ability, so that the individual becomes useful to himself, to the family and to the community at large. In rehabilitation, it is essential to identify the remaining capacities in such an individual and adopt measures to make him fit, independent, productive, useful and an active member of the family and community.

The different aspects of rehabilitation include:

- ✦ Physical rehabilitation: Restoration of function
- ✦ Vocational rehabilitation: Restoration of earning capacity
- ✦ Social rehabilitation: Restoration of relationships in the society
- ✦ Psychological rehabilitation: Restoration of personal dignity and confidence
- ✦ Example: Establishing schools for the blind, reconstructive surgery in leprosy
- ✦ Impairment: This means a defect in the structures and function of an organ or a part of the body. The impairment may lead to the development of secondary impairment as in leprosy, where damage to nerves may lead to plantar ulcers.
- ✦ Disability: This means the inability to carry out certain routines, or expected activities, considered normal for the age, sex, etc. due to impairment.
- ✦ Handicap: This means experiencing a disadvantage in life and not being able to play the role expected out of her/him, resulting from the impairment or disability.
- ✦ Figure 1.16 illustrates examples of disease, impairment, disability, and handicap.

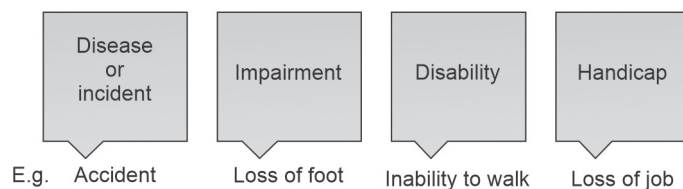


Fig. 1.16: Examples for disease, impairment, disability and handicap

5. Briefly explain the concept of health team. (SAQ) (3)

Answer

A health team has been defined as a group of persons who share a common health goal and common objectives, determined by community needs and towards the achievement of which each member of the team

contributes in accordance with her/his competence and skills, and respecting the functions of the other.

- ✦ The health team concept has taken a firm root in the delivery of health services both in developed and developing countries.
- ✦ The team must have a leader. The leader should be able to evaluate the team adequately and should know the motivations of each member in order to stimulate and enhance their potential.
- ✦ The health team approach aims to produce the right “mix” of health personnel to provide full health coverage for the entire population.

6. Briefly explain the terms disease control, elimination and eradication with suitable examples. (SAQ) (1+1+1)

Answer

Disease Control

Reducing the transmission of disease agents to such a low level that it ceases to be a public health problem, e.g. malaria is under control in India. Disease elimination is a complete interruption of transmission of disease in a defined geographical area, but the causative organism may be persistent in the environment, e.g. India has eliminated leprosy and guinea worm disease.

Disease Eradication

Complete ‘extermination’ of organisms. It is the ‘tearing out by roots’ of a disease. It is a global phenomenon, e.g. world has eradicated only 1 disease to date, i.e. smallpox.

➤ **CM 1.6:** Describe and discuss the concepts, the principles of health promotion and education, IEC, and behavioural change communication (BCC).

1. What is health promotion? Give examples. (SAQ) (3)

Answer

Health promotion is a mode of intervention in primary prevention. It includes the measures undertaken to remove the possibility of the occurrence of the disease. This consists of general measures which will strengthen the individual/host and prevent the occurrence of the disease by interrupting the interaction among the three factors of the epidemiological triad, i.e. agent, host and environment.

A few examples of health promotion are:

- ✦ Health education on personal hygiene
- ✦ Adequate nutrition
- ✦ providing antenatal and postnatal care

2. Explain in brief about specific protection. (SAQ) (3)

Answer

Specific protection is a mode of intervention in primary prevention addressing specific populations or specific

issues. These are specific measures which prevent specific diseases. The various measures are:

- ✦ Immunization against vaccine-preventable diseases
- ✦ Silver nitrate or penicillin eye drops against Ophthalmia neonatorum
- ✦ Condom against HIV/AIDS
- ✦ Use of specific nutrients such as vitamin A against nutritional blindness, IFA against nutritional anemia and iodized salt against iodine deficiency disorders
- ✦ Helmet against head-injury.

3. What is behaviour change communication? (SAQ) (3) Answer

Behaviour change communication (BCC) is a communication strategy which encourages individuals/communities to change their behaviour. BCC is described by its straight approach towards changing behaviour. BCC is an effective communication approach which helps to promote changes in knowledge, attitudes, norms, beliefs and behaviour.

Uses of behaviour change communication

- ✦ Increase in knowledge and attitude of the people
- ✦ Helps to trigger and stimulate people to adopt positive behavioural approaches
- ✦ Promotes appropriate attitude change
- ✦ Tailored for specific target groups, these strategies are efficient and effective.
- ✦ More sustainable and acceptable
- ✦ BCC helps to increase learning and skills, improving aptitudes and feelings of self-adequacy.

⇒ CM 1.7: Enumerate and describe health indicators.

1. Classify indicators of health, mention their uses and describe mortality indicators of health. (LEQ) (2+2+6)

Answer

Health is not defined in measurable terms and since health is multidimensional and is never static, health

is measured multi-dimensionally, indirectly. Health indicators are the guidelines which indicate the health status of a country (Fig. 1.17). An ideal health indicator should be:

- ✦ **Valid**—they should measure what they are supposed to measure
- ✦ **Reliable**—the answer should be the same if measured by different people
- ✦ **Sensitive**—they should be sensitive to changes in the situation concerned
- ✦ **Specific**—they should reflect changes only in the situation concerned
- ✦ **Feasible**—they should have the ability to obtain data needed, and
- ✦ **Relevant**—they should contribute to the understanding of the phenomenon of interest.

Health indicators are classified as follows:

Uses of health indicators

- ✦ To measure the health status of a country
- ✦ To compare the health status of one country with that of another country
- ✦ To assess the health care needs
- ✦ To plan and implement health care services
- ✦ To evaluate the health care services.

Mortality Indicators

The various mortality indicators used to assess the health status (Fig. 1.18) are:

- ✦ **Crude death rate (CDR):** It is defined as the number of deaths per 1000 population, per year, in a given area. It indicates the rate at which people are dying. The higher the crude death rate, the poorer the health status of a country. A decrease in CDR indicates an overall improvement in the health of the population.
- ✦ Even though CDR indicates the overall health status of a country, it is of less significance for international comparison, because of differing age-sex composition.

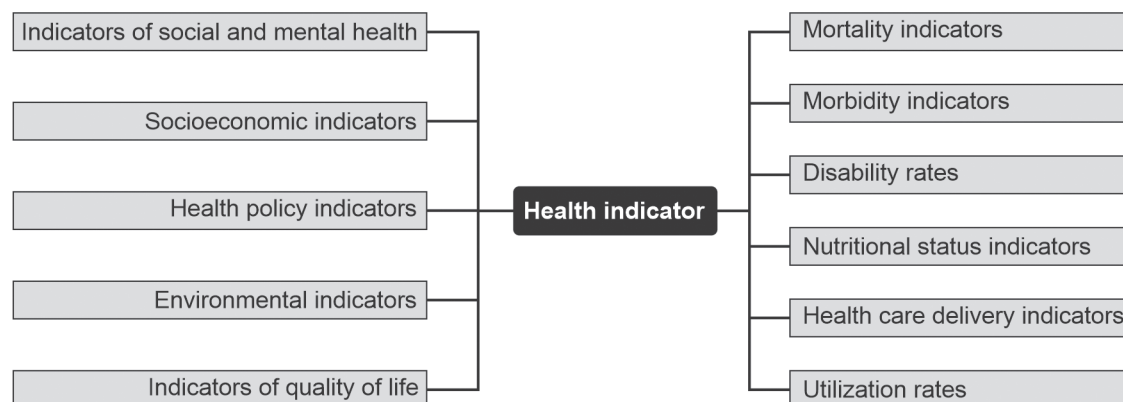


Fig. 1.17: Indicators of health

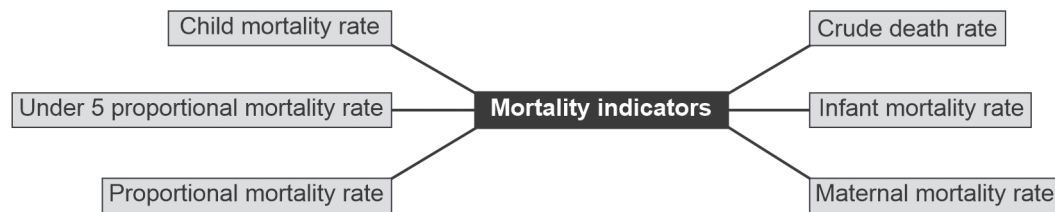


Fig. 1.18: Mortality indicators

CDR = Number of deaths during a year/mid-year population $\times$ 1000

- + Infant mortality rate (IMR): It is defined as the number of deaths of infants per 1000 live births, during a given year in a given population/country. It is a very comprehensive indicator, a sensitive indicator, and the most important indicator of health because it reflects not only the quality of maternal and child health services but also the availability and utilization of the services.

IMR = Number of deaths of infants in a year/total number of live births $\times$ 1000

- + Maternal mortality rate (MMR): This also indicates the quality of services provided to mothers of reproductive age group, i.e. antenatal, natal, and post-natal services.

MMR = Maternal deaths in a given population in a year/total live births $\times$ 1000

- + Child mortality rate (CMR): It is the number of deaths of children between 1 to 4 years, during a given year per 1000 mid-year population of that age group. This excludes infant mortality. This is also considered as an indicator of health, because it is related to nutritional services, immunization services, family welfare services, etc.

CMR = Number of deaths of children 1 to 4 yrs in a given year/ mid-year population of that age group $\times$ 1000

- + Under 5 proportional mortality rate: It is the proportion or percentage of total deaths occurring among children below 5 years of age. This includes both infant mortality and child mortality rates. A high rate indicates poor health status.
- + Proportional mortality rate: It is the simplest measure of calculating the burden of a disease in a community. The proportional mortality rate of communicable diseases means the percentage of total deaths due to communicable diseases. It is a useful indicator because it indicates the magnitude of preventable mortality.
- + Other mortality indicators are expectation of life, age-specific death rates, adult mortality rate, disease-specific mortality rate, case fatality rate, and years of potential life lost.

2. Briefly explain the morbidity indicators of health. Add a note on DALY and Sullivan's index.

(SEQ) (2+1.5+1.5)

Answer

Morbidity indicators of health reveal the burden of diseases in a community. These are used to supplement the mortality indicators which do not reveal the burden of ill health in the community. The following morbidity rates are used for assessing the health status:

- + Incidence rate: Number of new cases of a particular disease occurring per 1000 population in a year
- + Prevalence rate: Total number of both old and new cases existing in the population during a given period of time
- + Notification rate
- + Outpatient attendance rate
- + Hospital admission and discharge rate
- + Duration of stay in the hospital

The drawbacks of morbidity indicators are they tend to overlook a large number of conditions which are subclinical or inapparent.

Disability-adjusted life year (DALY): DALY is a measure of overall disease burden. It is the number of years lost in the healthy life of an individual due to ill health, disability or early death. One DALY is 'one lost year of healthy life'. It is a measure of the burden of disease in a defined population and the effectiveness of the interventions. It combines years of lost life (YLL) and years lost due to disability (YLD). Even though a valid indicator, its use is limited because of a lack of necessary data.

$$\text{DALY} = \text{YLL} + \text{YLD}$$

Sullivan's index: This is computed by subtracting the duration of bed disability (during life) from the expectation of life at birth. This is one of the recent indicators.

Sullivan's index = Life expectancy at birth - Duration of bed disability

For example, if the expectation of life is 62.6 years for an Indian and the disability days are 7.6 years, Sullivan's index is $62.6 - 7.6 = 55$ years

3. Enumerate the characteristics of an ideal health indicator. (SAQ) (3)

Answer

Explained under CM 1.7 Q1

4. Enlist health for all indicators. (SAQ) (3)

Answer

For monitoring progress towards the goal of health for all by 2000 AD, the WHO has listed the following four categories of indicators:

1. Health policy indicators:
 - ✦ Political commitment to "health for all"
 - ✦ Resource allocation
 - ✦ The degree of equity in the distribution of health services
 - ✦ Community involvement
2. Social and economic indicators related to health:
 - ✦ Income distribution
 - ✦ Work conditions
 - ✦ Adult literacy rate
 - ✦ Housing
3. Indicators for the provision of health care:
 - ✦ Availability
 - ✦ Accessibility
 - ✦ Utilization
 - ✦ Quality of care
4. Health status indicators:
 - ✦ Infant mortality rate
 - ✦ Child mortality rate
 - ✦ Life expectancy at birth
 - ✦ Maternal mortality rate

5. What are health care delivery indicators? (SAQ) (3)

Answer

Healthcare delivery indicators reflect the equity of the distribution of health resources in different parts of the country and of the provision of health care. The frequently used indicators of health care delivery are:

- a. Doctor-population ratio
- b. Doctor-nurse ratio
- c. Population-bed ratio
- d. Population per health/sub-centre, and
- e. Population per traditional birth attendant

6. What are disability rates? Classify them with examples. (SAQ) (3)

Answer

Disability rate is the percentage of the population, unable to perform the routine expected, daily activities due to injury or illness, e.g. eating, walking, dressing, going to the toilet, etc. This is used to supplement the

mortality and morbidity indicators. Disability rate quantifies the seriousness of the disease. The disability rates are divided into two groups:

1. Event type indicators:
 - ✦ Number of days of restricted activity
 - ✦ Bed disability days
 - ✦ Work loss days (or school loss days) within a specified period, e.g. thickness absenteeism.
2. Person type indicators:
 - ✦ Limitation of mobility, e.g. confined to bed or house, using special aid to get around the house
 - ✦ Limitation of daily activity, e.g. limitation in basic activity (eating, dressing, going to the toilet, etc.) limitation in major activity (ability to work at a job, housework).

7. Enlist the nutritional risk factors indicators for under five children under sustainable development goals. (SAQ) (3)

Answer

The nutritional risk factor indicators for under five children under sustainable development goals are:

- ✦ Exclusive breast-feeding rate 0–5 months of age
- ✦ Early initiation of breast-feeding
- ✦ Incidence of low birth weight among newborns
- ✦ Children under 5 years who are stunted
- ✦ Children under 5 years who are wasted
- ✦ Children under 5 years who are overweight
- ✦ Anaemia prevalence in children
- ✦ Anaemia prevalence in women of reproductive age

8. Enumerate nutritional status indicators. (SAQ) (3)

Answer

Nutritional status is a positive health indicator. Three nutritional status indicators are important indicators of health status. They are:

- A. Anthropometric measurements of preschool children, e.g. weight and height, mid-arm circumference
- B. Heights (sometimes weights) of children at school entry
- C. Prevalence of low birth weight (less than 2.5 kg)

➡ **CM 1.8:** Describe the demographic profile of India and discuss its impact on health.

1. Briefly describe the demographic profile of India. Add a note on its impact on health. (SEQ) (2+3)

Answer

The major demographic problem India is facing today is population explosion. India's demographic profile is characterised by:

- ✦ A large population base
- ✦ High fertility rates

- ✦ Low or declining mortality rates
- ✦ A large amount of the population below the age of 15 years (about 28%)
- ✦ High percentage of illiteracy (34%)
- ✦ High dependency ratio (50.5%)

Table 1.5 provides a demographic overview of India in 2020.

Table 1.5: Demographic profile of India	
Total population (2020)	1400 million
Crude birth rate (2020)	20
Crude death rate (2020)	6
Annual growth rate % (2020)	1.2
Population doubling time	30 years
Rural population	66.5
Adult literacy rate %	74.04
Density of population per sq. km (2020)	464
Population below 15 years % (2020)	25.9
Population above 60 years % (2017)	9.0
Average family size (2020)	1.8
Sex ratio, females per 1000 males (2016–18)	899

Impact of Demographic Profile on Health

- ✦ Large population is a challenge for universal health coverage. To set the health facilities as per IPHS is an uphill task.
- ✦ The majority of the population lives in rural areas (66%) and half of the people in urban areas live in slum areas. Most of the health resources are concentrated in urban areas.
- ✦ Low sex ratio, 943/1000 indicates high female mortality.
- ✦ Declining female child sex ratio at the rate of 914/1000 indicating sex-selective abortions are high in India.
- ✦ About 8% of the population is between 0–4 years. They are most vulnerable to diseases, malnutrition and death.
- ✦ High IMR (28/1000) and under-five mortality (32/1000) is a problem, their health needs are survival, nutrition, immunization and management of illnesses like diarrhoea and ARI.
- ✦ School-going children constitute about 18% of India's population. They need to be monitored for growth and development, adequate nutrition, education, and screening for 4Ds—defects, delays, diseases and deficiencies. This group needs education on healthy habits and behaviour, promoting physical activity and personal hygiene.
- ✦ Adolescents constitute nearly 18–20% of the population. They need information on healthy lifestyles, menstrual hygiene, sexual health, prevention of STIs and HIV, contraception and prevention of NCDs.
- ✦ Economically productive age groups (15–59 years) constitute nearly 62% of India's population. They should be healthy and fit to work at home and workplace. They need to be protected with health insurance schemes and work safety measures to ensure the economic development of the country.
- ✦ Women of reproductive age comprise nearly 52% of the population. Measures to be taken to reduce high fertility, control STI/HIV, reduce high MMR and morbidity due to anaemia, unsafe abortions, malnutrition and repeated pregnancies.
- ✦ The geriatric population (>60 years) constitutes nearly 12% of the total population in India. People are living longer due to improvements in health services and economic conditions. This group faces problems such as cardiovascular diseases (CVDs), stroke, cancers, and other NCDs and degenerative diseases.

2. What is an epidemiological transition? Add a note on the epidemiological transition ratio. (SAQ) (3)

Answer

The burden of disease patterns in developed countries, developing countries with high mortality, and developing countries with low mortality in the world differ substantially. This phenomenon reflects what is known as the epidemiological transition. As life expectancy increases, the major causes of death and disability in general shift from communicable, maternal, and perinatal causes to chronic, non-communicable diseases. The epidemiological transition ratio is defined as the ratio of DALYs caused by communicable, maternal, neonatal and nutritional diseases to those caused by non-communicable diseases and injuries. A ratio greater than one indicates a higher burden of communicable diseases than non-communicable diseases and injuries. The lower the ratio, the greater the contribution of NCDs and injuries to a state's overall disease burden.

India's health system therefore faces a dual challenge. Although the absolute burden from diseases such as diarrhoea, lower respiratory infections, tuberculosis, and neonatal disorders is being reduced, it remains high. At the same time, the contribution to health loss of non-communicable conditions such as heart disease, stroke and diabetes is rising.

3. What is the sex ratio? Enlist the factors influencing the sex ratio. (SAQ) (3)

Answer

The sex ratio is defined as "the number of females per 1000 males". One of the basic demographic characteristics of the population is the sex composition. The overall sex ratio for the Indian population according to

the 2011 census, is 943. This suggests that the number of females is quite less as compared to males.

The sex composition of the population is affected by:

- ✦ The differentials in mortality conditions of males and females
- ✦ Sex-selective migration
- ✦ Sex ratio at birth
- ✦ Social and cultural factors: In some cultures, there is a strong preference for male children, leading to practices such as sex-selective abortions and female infanticide, which can skew the sex ratio. Societies with strong patriarchal values may prioritize male offspring for economic, social, and cultural reasons.

Economic factors: In societies where the dowry system is prevalent, daughters may be seen as a financial burden, influencing families to prefer sons. In some regions, male children are preferred because they are expected to contribute more to the family income.

☞ **CM 1.9:** Demonstrate the role of effective communication skills in health in a simulated environment.

1. What is role playing? What are the advantages of role-playing in educating a group of community members in a village regarding awareness of malaria disease?

(SAQ) (1+2)

Answer

Role-playing is an interactive activity where participants assume specific roles and engage in simulated situations or scenarios. It involves acting out or representing characters to explore and understand different perspectives, experiences, or behaviours. Role-playing can be a powerful educational tool to raise awareness about malaria disease within a community. It enables active learning, enhances understanding, develops crucial skills, and empowers community members to become agents of change in disease prevention and control efforts.

Advantages of using role-play in educating a group of community members regarding malaria:

- ✦ It actively involves community members in the learning process.
- ✦ It allows participants to simulate real-life situations related to malaria disease. By assuming different roles, they can experience the challenges and decision-making processes involved in preventing and managing malaria.
- ✦ It encourages participants to step into the shoes of different individuals, such as patients, healthcare providers, or community leaders.
- ✦ It stimulates critical thinking and problem-solving skills.
- ✦ Role-playing can help overcome cultural barriers or taboos that might inhibit discussions or information sharing around malaria.

- ✦ By adopting different roles and scenarios, participants can explore sensitive topics more comfortably and openly, promoting greater awareness and understanding within the community.

2. Explain in brief about the role of effective communication skills in the healthcare setting. (SAQ) (3)

Answer

Effective communication skills enable healthcare professionals to establish a strong rapport with patients. This patient-centred approach promotes trust, cooperation, and better healthcare outcomes.

- ✦ Clear and concise communication ensures accurate and timely exchange of medical information between healthcare professionals.
- ✦ Enhanced patient education about their health conditions, treatment options, and preventive measures.
- ✦ It facilitates effective collaboration among healthcare teams.
- ✦ Effective communication skills help resolve conflicts by fostering open dialogue, active listening, and finding mutually agreeable solutions. It promotes a respectful and collaborative environment.
- ✦ Good communication skills allow healthcare professionals to convey empathy and provide emotional support to patients and their families.

☞ **CM 1.10:** Demonstrate the important aspects of the doctor-patient relationship in a simulated environment.

1. Write in brief about the boundaries of the doctor-patient relationship. (SAQ) (3)

Answer

The doctor-patient relationship is built on trust, mutual respect, and clear boundaries. Establishing and maintaining boundaries in this relationship is essential for ensuring ethical and effective healthcare.

- ✦ Doctors should maintain a professional demeanour, avoiding personal or intimate relationships with their patients.
- ✦ Doctors must respect patient confidentiality, maintaining the privacy of medical information shared during consultations.
- ✦ Patient consent is necessary for any examination, procedures or sharing of information with other healthcare providers.
- ✦ Doctors should avoid exploiting their position of authority, they should always prioritize the well-being and autonomy of their patients.
- ✦ Adhering to these boundaries ensures ethical healthcare practices and promotes a safe and respectful environment for both doctors and patients.

2. What are the responsibilities of doctors in caring for terminally ill patients? (SAQ) (3)

Answer

When caring for terminally ill patients, doctors have a critical role in providing compassionate and comprehensive care. Here are some key responsibilities that doctors have in the care of terminally ill patients:

- + Accurate diagnosis and predicting of the prognosis
- + Pain and symptom management
- + Communication and shared decision-making with colleagues and family members
- + Emotional and psychosocial support both to the patient and the patient's family members
- + Doctors play a central role in coordinating the care of terminally ill patients. They collaborate with other healthcare professionals, such as nurses, social workers, and palliative care specialists to ensure seamless and integrated care
- + Ethical considerations: Doctors must navigate complex ethical issues that arise in the care of terminally ill patients. This includes respecting patient autonomy, maintaining confidentiality, and ensuring that end-of-life decisions are aligned with the patient's wishes.

MULTIPLE CHOICE QUESTIONS

1. All of the following indicators are included in the physical quality of life index (PQLI), except:
 - a. Infant mortality rate
 - b. Life expectancy at age one
 - c. Literacy rate
 - d. Per capita income
2. Which one of the following is not a socio-economic indicator?
 - a. Literacy rate
 - b. Family size
 - c. Housing
 - d. Life expectancy at birth
3. Iceberg phenomenon differentiates:
 - a. Apparent and inapparent
 - b. Symptomatic and asymptomatic
 - c. Cases and carriers
 - d. Diagnosed and undiagnosed
4. Chemoprophylaxis is a prevention type:
 - a. Primary prevention
 - b. Secondary prevention
 - c. Tertiary prevention
 - d. Quaternary prevention
5. The following does not determine specific protection:
 - a. Pap smear for early detection of carcinoma cervix in the community
 - b. Wearing of goggles by welders
 - c. Wearing of seat belts by car drivers
 - d. Vitamin A for children prophylaxis
6. Which of the following is the most logical sequence?
 - a. Impairment-disease-disability-handicap
 - b. Disease-impairment-disability-handicap
 - c. Disease-impairment- handicap-disability
 - d. Disease-handicap-impairment-disability
7. Minimum and maximum values established for the calculation of life expectancy index in HDI are:
 - a. 0 year and 65 years
 - b. 0 year and 85 years
 - c. 20 years and 85 years
 - d. 0 year and 100 years
8. Human living standards can be compared in different countries by:
 - a. HDI
 - b. PQLI
 - c. HPI
 - d. DALY
9. When you immunize a child for measles what type of prevention are you doing:
 - a. Primordial prevention
 - b. Health promotion
 - c. Specific protection
 - d. Secondary prevention
10. One DALY signifies:
 - a. 1 year of disease-free life
 - b. 1 lost year of a healthy life
 - c. 1 month of bedridden life
 - d. None of these
11. Disease elimination means:
 - a. Cure of the disease
 - b. Preventing the transmission
 - c. Eradication of the vector
 - d. Complete termination of infective organism
12. The time interval that elapses between the point when "sufficient cause" becomes operative to the point when the first pathological changes of the disease start in the body is:
 - a. Generation time
 - b. Induction period
 - c. Latent period
 - d. Lag phase

13. A condition, quality or attribute, the presence of which increases the chances of an individual to have, develop or be adversely affected by a disease process is known as:
- Predisposing factor
 - Risk factor
 - Precipitating factor
 - Risk marker
14. Education and motivation for a healthy lifestyle are:
- Primordial prevention
 - Secondary prevention
 - Health promotion
 - Specific protection
15. The inability to carry out certain function or activity which is otherwise expected for that age/sex is known as:
- Disease
 - Impairment
 - Disability
 - Handicap
16. Disability limitation is part of:
- Primordial prevention
 - Primary prevention
 - Secondary prevention
 - Tertiary prevention
17. In an area with fluoride-rich water, the defluoridation of water is which level of prevention?
- Primary
 - Secondary
 - Tertiary
 - Primordial
18. The tip of the iceberg phenomenon is appropriately represented by:
- Malaria
 - PEM
 - Measles
 - Rabies
19. Expectation of life, free of disability is known as:
- Park's index
 - Smith's index
 - Sullivan's index
 - Life index
20. Which is the best index for the burden of disease?
- Case fatality rate
 - Disability-adjusted life years
 - Dependency ratio
 - Morbidity data

Answers

- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 1. d | 2. d | 3. a | 4. a | 5. a. | 6. b |
| 7. c | 8. a | 9. c | 10. b | 11. b | 12. b |
| 13. b | 14. c | 15. c | 16. d | 17. a | 18. b |
| 19. c | 20. b | | | | |

High Yield Points

- **Health:** A state of complete physical, mental and social well-being of an individual and not merely an absence of disease or infirmity
- **Positive health:** Perfect functioning of body and mind
- **Physical quality of life index (PQLI):** 3 indicators-infant mortality rate, life expectancy at age one and literacy level
- **Human development index (HDI):** Life expectancy at birth, education and standard of living
- **Epidemiological triad:** Interaction between agent, host and environment
- **Primordial prevention:** Population strategy and high-risk strategy
- **Primary prevention:** Health promotion and specific protection
- **Secondary prevention:** Early diagnosis and treatment
- **Tertiary prevention:** Disability limitation and rehabilitation
- **Behaviour change communication (BCC):** Communication strategy which encourages individuals/community to change their behaviour
- **CDR:** Number of deaths during a year/mid-year population $\times 1000$
- **IMR:** Number of deaths of infants in a year/total number of live births $\times 1000$
- **MMR:** Maternal deaths in a given population in a year/total live births $\times 1000$
- **Child mortality rate:** Number of deaths of children 1 to 4 years in a given year/mid-year population of that age group $\times 1000$
- **Incidence rate:** Number of new cases of a particular disease occurring/1000 population in a year
- **Prevalence rate:** Total number of both old and new cases existing in the population during a given period of time
- **Disability-adjusted life year (DALY):** Number of years lost in the healthy life of an individual due to ill-health, disability, or early death
- **Sullivan's index:** Life expectancy at birth - Duration of bed disability
- **Sex ratio:** The number of females per 1000 males
- **Target diseases for eradication globally:** Polio, measles, guinea worm
- **Informed consent:** This is a fundamental ethical and legal requirement that ensures patients are fully

informed about the medical treatments or procedures they will undergo.

- ❑ **Demographic transition:** It is the change in population size from a condition in which both the birth and death rates are high, to another condition in which both these rates are low.

Suggested Reading

- ✦ Park K. *Park's Textbook of Preventive and Social Medicine*. 27th ed. Jabalpur: M/S Banarasidas Bhanot Publishers; 2023.
- ✦ Lal S. *Textbook of Community Medicine Preventive and Social Medicine with Recent Update*. New Delhi: CBS Publishers & Distributors Pvt Ltd; 2023.
- ✦ Suryakantha AH. *Community Medicine with Recent Advances*. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2023.
- ✦ Kadri AM. *IAPSM's Textbook of Community Medicine*. New Delhi: Jaypee Brothers Medical Publishers; 2024 Feb.
- ✦ Census of India 2011. Available from: <https://censusindia.gov.in/census.website/demography>