The Concept of Health and Disease

Health is defined as "Complete physical, mental and social wellbeing and not merely the absence of disease or infirmity-WHO 1948". Then add spiritual, and in recent years the statement is amplified to include the ability to lead a socially and economically productive life.

The converse of Health is Disease. Disease refers to any change from a normal state of health or an abnormal state in which part or all of the body is not properly adjusted or is not capable of carrying on its normal functions. Literary, "DISEASE", is the opposite of ease, when something wrong in the body function, or any deviation from normal.

The words "disease", "illness", "sickness", are loosely interchangeable, but are better regarded as not wholly synonymous.

**Disease:** A cluster of signs, symptoms and laboratory findings linked by a common patho-physiologic sequence.

**Illness:** The subjective state of the individual who feels aware of not well being (The ill individual may or may not be suffering from disease).

**Disease** is an objectively measurable pathological condition of the body. Tooth decay, measles, or a broken bone, are examples. In contrast, **illness** is a feeling of not being normal and healthy. Illness may, in fact, be due to a disease. However, it may also be due to a feeling of psychological or spiritual imbalance.

**Sickness:** the social role assumed by an individual suffering from an illness

**Syndrome:** When the signs and symptoms have not yet clearly been placed in a common patho-physiologic sequence.

**Causes of disease:** some diseases have a well understood etiology, others have a partially understood etiology, and others have an undetermined etiology. The main categories of disease include:

1) Infectious disease – caused by disease producing microorganisms
2) Nutritional deficiency disease – caused by the lack of a particular, necessary nutrient
3) Congenital disease* – is present at birth and is the result of some condition that occurred in utero (maternal infection, use of drugs or alcohol, etc.)
4) Inherited disease* – are passed to the child via the parent’s reproductive cells (Genetic diseases)
5) Metabolic diseases – result from abnormalities in the biochemistry of body function. Many are congenital or inherited disorders.
6) Degenerative diseases – this occurs when there is a wearing down of part of the body leading to loss of function. This may be due to aging, excessive caloric intake, radiation, errors in gene function, etc.
7) Neoplastic diseases – these are tumors which are new growth of cells or tissues. Tumors may be benign or malignant.
8) Immunologic diseases – this occurs when some of our immunologic defenses attack our own bodies. Are also called autoimmune diseases.
9) Iatrogenic disease – are caused by health care personnel during the delivery of health care
   • Could be due to use of contaminated equipment
   • Could be caused by the administration of drugs
10) Psychogenic diseases – are caused, at least in part, by emotional factors
11) Idiopathic diseases – diseases that have an undetermined cause SLE

❖ What are the signals of disease?
   • Symptoms – subjective changes in body function such as pain or malaise
   • Signs – objective changes that can be observed and measured such as fever, swelling, or a rash
   • Syndrome – a group of symptoms and signs that always accompany a particular disease

❖ Clinical disease: characterized by signs & symptoms.
❖ Non-clinical (Inapparent, Asymptomatic) disease ➔ Preclinical state, subclinical disease, chronic disease, latent disease, or carrier state.

❖ What are the stages of disease?
   • Period of incubation – the time been acquiring the infection and the appearance of he first sins or symptoms. This may be a constant time for every individual who acquires the infection or a variable time depending upon the disease.
   • Prodromal period – when the first signs and symptoms appear.
   • Period of illness – when the disease is most acute and the overt signs and symptoms of the disease occur (an increase or decrease in WBCs may occur here).
   • Period of decline – this is where the signs and symptoms subside. If the decline occurs quickly, it is said to occur by crisis. If the decline occurs over a longer period of time, it is said to occur by lysis.
   • Period of convalescence - this is where the person regains strength and the body returns to its pre-diseased state.

➔ It is important to recognize the board spectrum of disease severity, which can be presented as ice berg.
Consequences or effects of a disease
1. Impairment: Functional loss in a part of the body.
3. Handicap: Impairment of the social role played.

- Epidemiology: has been defined as 'the study of the distribution and determinant of disease or health related status or events in specified population, and the application of this study to control of health problems'.
  It is basically the study of health and disease in population and how we can improve the health and prevent the disease at community level.

- Epidemiology is a Greek word (epi = upon, demos= people, district, logos= word, discourse) ➔ Study what fall on human population.

- Epidemiology provides data necessary about health and disease in a population (morbidity, mortality, disability, hospitalization, quality of life, risk factors, population at risk) ➔ Health planning ➔ policymakers ➔ Improvement of health status (which is the ultimate objective of Epidemiology). Epidemiology is a scientific discipline, sometimes called “the basic science of public health.”

- Epidemiology is not critical only to Public Health, but also to clinical practice. Clinical Epidemiology is the application of epidemiological principles and methods to the practice of clinical medicine. The practice of medicine is dependent on human data, for example:
  
  **Ex1:** If a physician hears an apical systolic murmur, who does he know it represent mitral regurgitation?

  **Ex2:** A patient with Ca lung asks his physician "how long do I have to live, doctor?"

  **Ex3:** CXR finding suggesting TB?

  To answer of all above examples is based on physical and pathological findings in a large group of population. Clinical decisions should be based on sound scientific evidence (Evidence Based Medicine)
The term **applied epidemiology** is sometimes used to describe the application or practice of epidemiology to address public health issues. Examples of applied epidemiology include the following:

- The monitoring of reports of communicable diseases in the community
- The study of whether a particular dietary component influences your risk of developing cancer
- Evaluation of the effectiveness and impact of a cholesterol awareness program
- Analysis of historical trends and current data to project future public health resource needs

**Two fundamental assumptions of Epidemiology:** that disease is not occurs by chance nor it distribute randomly in population. That means human disease dose not arise in a vacuum, But it occurs at specific times in specific environment and location, and affects particular population for very specific reasons.

**Types of Epidemiology**

1. **Descriptive Epidemiology:** Examine the distribution of the disease in a population, and observing the basic features of its distribution in term of Person, Place and Time {Basic triad of descriptive epidemiology}.
   - **Person:** Who is getting the disease and who is not? ➔ Age, Sex, Race, Marital status, socioeconomic status [usually measured by education, occupation and income].
   - **Place:** Where is the rate of the disease highest or lowest? ➔ Geographical distribution of the disease.
   - **Time:** When dose the disease occur commonly or rarely? ➔ Epidemic, cyclical changes, secular trend.

2. **Analytic Epidemiology:** Testing a hypothesis about the cause of disease by studying how exposure of interest relates to the disease of interest. It observes the Agent, Host and the Environment {Basic triad of Analytic epidemiology}.

**Epidemiological Terms:**

- Population at risk.
- Sporadic.
- Outbreak.
- Endemic.
- Epidemic.
- Pandemic.
- Hyper-endemic.