

HEALTH AND DISEASES

This article introduces the reader to the concept of Health and the indices and evaluation of health. It also gives a brief summary on the types and causes of Diseases. The following are discussed:

1. The concept of Health.
2. Factors affecting Health.
3. The indices and evaluation of Health.
4. Some terms-Endemic, Epidemic, Pandemic.
5. Recognise the changing pattern of Diseases in the developed and developing world.
6. Types of causes of Diseases.

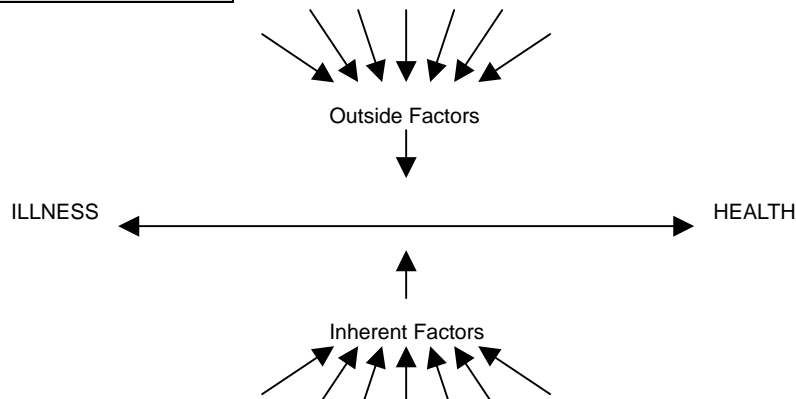
WHAT IS HEALTH?

We are ill when we suffer from diseases.

However, before we discuss disease, we need to define Health and how Health is achieved.

- Health is defined in the World Health Organisation's Constitution as "a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity". Thus health "is a positive concept emphasising social and personal resources as well as physical capabilities".
- A healthy person therefore needs to maintain healthy habits such as taking regular exercises and adequate rest, adopting a high level of personal hygiene, eating a nutritionally balanced diet, abstaining from the abuse of drugs and alcohol, taking care of one's mental well-being and developing social skills to interact in a positive manner within society. To be healthy is to be in a state of homeostasis (balance) with one's surroundings. To avail oneself to the advances of medical treatments and preventive measures such as immunizations further booster one's health.
- To achieve a healthy society, remember that a healthy person has a duty to the health of his fellow beings, his surroundings and the environment he lives in.

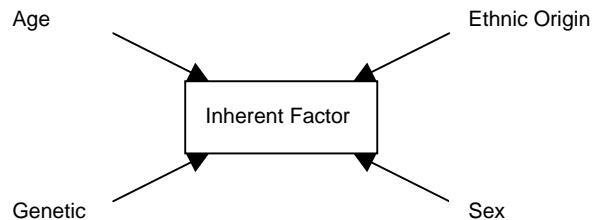
FACTORS AFFECTING HEALTH



To understand what cause diseases, we must first understand the factors that may affect our health.

Health can be influenced by many factors:

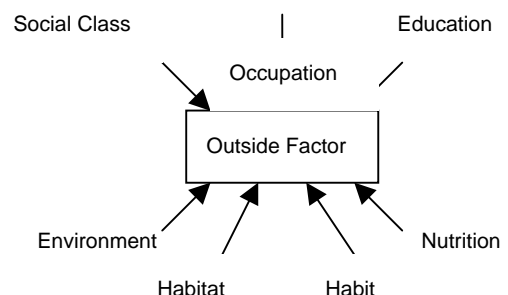
A. INHERENT FACTORS



- **Age** – Elderly persons and the very young are more prone to be more severely affected when sick as a result of their reduced immunity, e.g. yearly influenza vaccines are advised for the elderly yearly.
- **Ethnic origin** – Certain ethnic groups are more at risk of developing some illnesses, probably as a result of their genetic make up, the environment they live in or the rituals they practice, e.g. Nasopharyngeal cancer (NPC) is more common in Southern Chinese especially among the fishing community. This is thought to be partly due to the addition of salted fish to congee fed to their young.
Also Chinese non-smoking females have a high risk of lung cancer, which is thought to be related to the exposure to mutagens in fumes from oils used in wok cooking.
- **Genetic makeup/ Inherited** – In families with a history of breast cancer, certain genes could be inherited, which may result in an increased risk for the condition.
- **Sex** – Certain conditions, e.g. sex linked recessive inherited haemophilia, in which a coagulation factor 8 is missing resulting in easy bleeding, occur only in males. The females of the family may or may not be carriers of the disease. Queen Victoria and her descendents are well known to have been affiliated with this genetically inherited condition.

B. OUTSIDE FACTORS

- **Social Class** – The affluent suffer from diseases of plenty. A diet high in fat is thought to be contributory to breast cancer



which tends to occur in women of the higher socioeconomic class. On the other hand, children in social classes 4 and 5 have been found to have an increased morbidity and mortality.

Social associations are complex as they determine a way of life and behaviour, a certain level of education, specific attitudes, habits and the capacity to select. Their cumulative effects can be very important.

The system of measuring "Social Class" is measured by grouping families by the occupation of the father. Five classes or groups of families are loosely described:

Social Class 1. Professional, upper managerial groups, officers of the armed forces, clergy, etc.

Social Class 2. Lesser managerial groups, teachers, higher clerical workers.

Social Class 3. Skilled artisan workers, craftsmen, some clerical workers.

Social Class 4. Semi-skilled workers.

Social Class 5. Unskilled Workers.

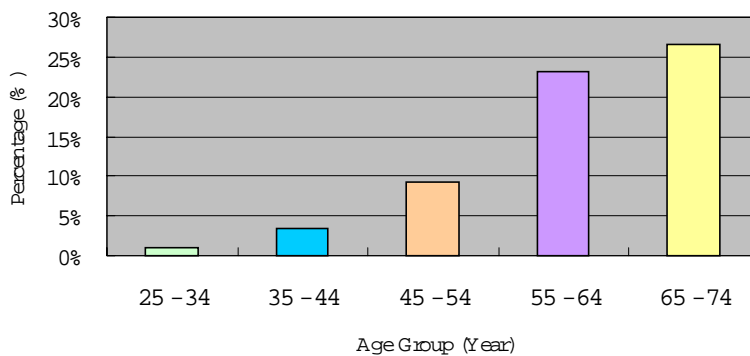
- **Occupation** – Occupation may be associated with certain diseases, e.g. lung cancer in asbestos workers.
- **Education** – Education helps to inform and guide choices. Choosing a healthy lifestyle helps prevent diseases.
- **Nutrition** – Both over and under-nutrition (malnutrition) are unhealthy for the body.
- **Habits** – Habits such as smoking and excessive drinking may lead to lung and liver cancer.
- **Habitat** – Where one lives matters. A large scale comprehensive study in 1996 conducted by the Chinese University of Hong Kong found that the number of local asthmatic children doubles that of Beijing and Guangzhou. High risk factors include home smoking, maternal smoking, use of synthetic pillow and bedding and the use of gas as cooking fuel.
- **Environment** – WHO estimates that every year over 5 million people die of illnesses linked to unsafe drinking water, improper excreta disposal and unclean domestic environments.

INDICES AND EVALUATION OF HEALTH

The evaluation of health, however, is based on negative indices such as a community's mortality, morbidity and disability. Analysis of these figures helps to monitor the health of a community.

- **Mortality Rate** – This measures the proportion of deaths in a population to a specific number of the population.(e.g. per 1000 or 100,000)
e.g. men in HK have significantly higher mortality rate compared with women (588.1 per 100,000 males versus 434.4 per 100,000 females in 2000).
- **Morbidity** – This measures the incidence (rate of occurrence) of a disease/diseases in a population.
e.g. the prevalence of high blood pressure in a population of different age groups (from 1% at age 25-34 to 26.5% at age 65-74 in a study of 1399 men).

Percentage of Hypertension by Age Group
Men Aged 25 - 74 (1995 - 96)



- **Incidence Rate** – The number of new reported cases of the disease that occur per year per thousand (or million) population,
e.g. in 1999, 11,329 new cases of cancer in men were reported. The incidence rate was 347 per 100,000 males.
- **Prevalence** – The total number of cases of a disease existing in the population at a given time (per unit population),
e.g. the prevalence of diabetes was 9.5% in HK in the year 1995/1996.

(N.B. The above figures came from a report on “Men’s Health” published by the Department of Health in 2002.)

DISEASE PATTERNS IN DEVELOPED AND DEVELOPING WORLD

Analysis of mortality rates especially in modern societies and the **developed world** have shown a marked decline in infectious diseases. Various factors have been suggested as contributory:

- The success of Immunisation Programmes
- Availability of antibiotics
- Rising standards of living (especially dietary)
- Improvements in hygiene
- Control of physical environment
- Limitation of population growth
- Improvement in preventive and treatment measures.

As a result, there is now a shift in disease pattern to those of chronic debilitating diseases in place of infectious diseases.

In adults, cancer and heart diseases are now the major causes of death in the developed world.

The rise in:

- *tobacco consumption* (approximately 42% of men and 24% of women in the developed world are smokers)
 - *poor eating habits* (high fat low fibre) and
 - *a sedentary lifestyle*
- contribute to a large proportion of current morbidity and mortality.

Chronic diseases now form the major causes of death in Hong Kong. The top three killers---Cancer, Heart diseases and Cerebrovascular diseases accounted for 59% of all deaths in 1999. This constituted a major burden on our health and our health care system.

HOWEVER,

- **Globally, infectious diseases remain the world's leading cause of death**, killing at 17 million people a year.
- The problem is particularly that of the **developing world** where *poor sanitation, overpopulation and overcrowding* are important factors.
- The emergence of *new infectious diseases* and the development of *resistance against drugs* and chemicals that previously killed many of these infectious agents has compounded the problem.
- Increase in *travel* and *trade* also increase the opportunities for infectious diseases to spread to new areas.

Hence, in discussing Diseases, we must remember that:

- Many diseases are a result of the interaction of many different factors (multifactorial), e.g. being infected by the Epstein-Barr virus does not induce cancer of the nasopharynx. In association with other factors, for example being fed salted fish over a length of time, may help induce the viruses to initiate cancerous changes.

- Many diseases are lifestyle related, e.g. obesity and a sedentary lifestyle.
- The globalization of diseases as a result of the increasing ease of travel and population migration, e.g. vector borne diseases being transmitted to countries outside the original endemic zones.

ENDEMIC, EPIDEMIC AND PANDEMIC

Endemic

An endemic disease is one that is always present in a population.

For example: Dengue fever is endemic in Africa.

Epidemic

An epidemic of a particular disease means it affects a large number of the population in a certain place and spreads quickly among the population.

For example: An epidemic of influenza sweeping through Hong Kong.

Pandemic

A pandemic is the occurrence of a disease affecting many people over a wide area, for example, globally.

Classic example: the AIDS pandemic.

The Types and Causes of Diseases

Diseases can be classified in different manners.

They can be categorised into:

- Acute and Chronic
- Infectious and Non-Infectious
- Hereditary and Acquired
- Primary and Secondary
- Different bodily Systems

The following is an example of categorising diseases in the **Infectious and Non-Infectious** mode.

INFECTIOUS

Infectious Diseases are transmitted from person to person (or rarely from other sources to human, e.g. the Avian Flu in Hong Kong in 1997) and may be caused by, for example:

- **Viruses**

e.g. Rubella (German Measles)

This virus is found in secretions in the mouth and throat and is spread through the respiratory tract. The characteristics of the disease are a pink faint rash all over the body, enlargements of some lymph nodes, and other signs of a mild cold. There may be associated arthritis. However, the most important aspect of this illness is that ***if it occurs in early pregnancy, it may give rise to abnormalities in the unborn baby.*** Vaccination is now offered to all children in the combined MMR (Measles, Mumps, Rubella) vaccine.

Note the recent MMR vaccine scare. Concerns relating the vaccine to autism and Crohn's disease have seen vaccination coverage fall by 2% in the UK. The vaccine has since been given the all clear by The Committee on Safety of Medicine (UK).

Note also the Pertussis (Whooping Cough) vaccine scare in the UK in the 1970's. Vaccination coverage dropped from 80% to 30% resulting in three epidemics, thousands of hospital admissions and at least 70 deaths from pertussis. The research on which the scare (of the vaccine being capable of causing serious neurological abnormality) was based was later shown to be wrong.

- **Bacteria**

e.g. Staphylococcus aureus

These bacteria are part of the normal skin flora but may also cause serious infections such as pneumonia, food poisoning and are often the bacteria found in large boils, open wounds, infected heart valves and bones. Staphylococcus aureus can also cause serious infection of the blood (septicaemia).

- **Fungi**

e.g. Tinea (ringworm)

Tinea infections are common skin infections caused by dermatophytes. These are very common in Hong Kong especially during the hot and moist summer months and can easily reoccur. These are classified into Tinea pedis (infecting the feet), Tinea cruris and corporis (infecting the groin and the body), Tinea capitis (infecting the scalp) and Tinea manuum (infecting the hands). Treatment is by either local or oral antifungal treatment. The condition can become chronic and relapsing.

- **Protozoa**

e.g. Malaria

Malaria is caused by infection of the different types of Plasmodium species. It is transmitted by the bites of infected female anopheline mosquitoes. The disease is endemic in Africa and some parts of the tropics and is estimated to cause a million deaths in Africa alone. It results in high

fever, profuse sweating, severe headache and delirium. Cerebral malaria affecting the brain is the most dangerous with a mortality rate of 20 to 50%.

NON-INFECTIOUS

- **Cancer**

e.g. Lung Cancer (see article on Cancer).

- **Degenerative**

e.g. Arthritis

Arthritis causes stiff, aching and swollen joints. There are many types of arthritis, including rheumatoid arthritis, osteoarthritis etc. Some forms of arthritis such as rheumatoid arthritis may affect other organs of the body.

- **Dietary**

e.g. Scurvy

Scurvy is a condition associated with vitamin C deficiency, which may lead to bleeding and impaired growth. The natural sources of vitamin C are citrus fruits, berries and green vegetables. Sailors in the old days suffered scurvy due to the long periods spent at sea, and the unavailability of fresh fruit and vegetables. However, this condition is now rare in developed societies and usually only occurs in persons on an unusual or restricted diet.

- **Allergy**

e.g. Asthma

Asthma is a condition characterised by frequent attacks of shortness of breath and wheezing. This occurs as a result of a narrowing of the airways due to muscle spasm and swelling of the mucus lining of the airways. Attacks are precipitated by allergens, which are substances that irritate the airways e.g. house dust mites, tobacco smoke. Treatment is by medications that reduce the spasms and inflammation of the airways.

- **Psychological**

e.g. Depression

This may affect the mind and body. People with depression lose interest in daily life, adopt erratic eating habits resulting in weight loss or weight gain, have difficulties sleeping, get tired easily, feel worthless/guilty, cannot concentrate or think clearly, have depressed mood and may have thoughts of death. It is important for us to be aware of these signs so that we can recognise depression and learn to deal with it.

- **Metabolic**

e.g. Diabetes

Diabetes is a chronic illness caused by the reduced production of insulin by the pancreas. As a result, there is increased concentration of the sugar glucose in the bloodstream which may damage the body's systems, especially the nerves and vessels. If not well controlled, people with diabetes may become blind, have kidney failure, have increased incidence of heart disease and diabetic nerve damage leading to a loss of sensation.

- **Inherited**

e.g. Down's Syndrome

Down's Syndrome is a chromosomal abnormality in which an extra chromosome no.21 is present in all the cells. All cells have an additional chromosome no.21 (i.e. 47,XX, or 47,XY +21). Pregnant women over the age of 35 and above have an increased chance of conceiving a baby with Down's Syndrome. The child is mentally retarded but the severity of the retardation varies. Other associated problems are conditions affecting the heart, hearing, sleep related breathing problem etc. Down's syndrome sufferers are also more prone to developing leukemia.

- **Occupational and Industrial**

e.g. Asbestosis

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Author's Note:

This article is a brief introduction to the concept of health and diseases and has not in any way discussed mental or social health. The omission is deliberate. Mental and social health, especially in the current social and economic environment, are of vital importance. Each warrants detailed discussion as a separate topic in its own right.

* Materials for this article are taken from lessons written for a Secondary level "Health Module" for the Education Department in 2002.