Module 1: Health & Disease

Module Aim

In this module, you will learn about the terms 'health' and 'disease' in detail. You will also learn about risk factors associated with disease. By the end of the module you will have a better understanding of how the health status of a person should be defined.

This module contains the following sections:

Section 1.1: Health

Section 1.2: Disease

Section 1.3: Risk Factors

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Module 1 Pre-test

Instructions: Read the following statements carefully and tick [√] the appropriate column. If you are unsure of any answer you may tick the "Don't Know" column. The time allotted to you is 5 minutes.

Number	Question	True	False	Don't Know
1	Good health is defined as the absence of disease.			
2	If a person does not have any physical symptoms, then they can be considered healthy.			
3	As people age they become more likely to develop chronic illnesses such as cardiovascular disease and diabetes.			
4	Lifestyle choices such as smoking, level of physical activity, and diet, do not have an important effect on the health status of a person.			
5	Family history of disease is an important factor in a person's health status.			

Section 1.1: Health

In this section you will learn the definition of the term "health" and become familiar with what determines the health status of a person. It is important to define what it means to be healthy in order to recognize when a person is not feeling well.

Learning objectives – at the end of this section you should be able to:

- Recall the World Health Organization's definition of Health and explain its meaning
- Explain the value of international classification systems
- List the Determinants of Health

This section contains the following subsections:

1.1.1. Definition of Health

1.1.2. Determinants of Health

1.1.1. Definition of Health

Health is a word used to describe how a person's body feels. It is the general condition of a person's mind and body, usually meaning to be free from illness, injury or pain. Being healthy is a desirable state because the health status of a person directly affects their ability to function in the world. For example, a person suffering from chronic knee pain may not be able to perform simple day to day tasks due to their health condition. Similarly, a person with cardiovascular disease may also not be able to function at the same level of productivity as their healthy counterparts.

The World Health Organization (WHO), which is the highest authority organisation associated with health matters at an international level, defines health as follows:

"Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity in order to enable a person to lead a socially and economically productive life." (WHO, 1948)

This definition means that health is much more than just the absence of disease. Good health requires that the person should not only be in a state of physical health, but should also be mentally and socially healthy. The term "**well-being**" denotes a good or satisfactory health condition of a person. It means that the person is content with the physical, social and psychological aspects of their life. "**Infirmity**" means weakness or loss of strength, especially due to illness or old age. The terms "**physical**", "**mental**" and "**social**" in the above definition are examples of Dimensions of Health. In other words, they are the different aspects of health.

Remember:
Health has the following components:

- Physical
- Social
- Mental

Absence of good health in any of these components in a person indicates that they are **not** completely '**healthy**'.

Discussion Question

A 34 year old mother works two jobs to help support her children. Although she does not show any outward signs of disease or illness, she often complains that she is stressed out and does not have enough time for herself. According to the WHO definition of health, is she a healthy person? Explain why or why not.

1.1.2. Determinants of Health

A determinant is something (called a factor) that influences the occurrence of an event. The health of individuals and communities is influenced by a large number of factors. These factors are called 'Determinants of Health'. In addition to access to healthcare services, factors such as where a person lives, the environment they live in, their genetics, their income/education level, and their relationships with family and friends, can all have an impact on their health.

In addition to these factors, the WHO provides a list of factors that it considers to be major determinants of health status:

- Social and economic environment
- Physical environment
- Individual characteristics and behaviours

These factors are further separated into modifiable vs. non modifiable factors (**Table 1**). Health care providers cannot target all of these determinants of health in order to improve the health of a person. Therefore, health care providers focus on targeting lifestyle, social, and access-related modifiable factors to improve the health of a person. The effects of these factors on cardiovascular (heart) disease will be further discussed in **Module 6**.

Table 1. Modifiable vs. non-modifiable determinants of health

Modifiable Factors	Non-Modifiable Factors
Lifestyle	Income and Social Status
Social environment	Education
	Physical Environment
Access to recommended care	Genetics
	Gender and Age

Modifiable Factors

For the purposes of this training program, the following factors can be considered as modifiable factors given the right amount of training and access to healthcare services.

Lifestyle: With enough counselling from trained personnel, the diet and level of exercise of a person can be altered. For participants suffering from illness, lifestyle modification is an important factor in increasing the quality of their life. For example, participants can be counselled to quit smoking, reduce consumption of alcohol and high cholesterol foods, and can also be encouraged to exercise and have an active lifestyle. Therefore, while many factors may not be modifiable, a health care provider has the power to bring about a drastic change in a person's behaviour. In addition, modifying these lifestyle factors in persons who are not yet ill can prevent disease.

Social environment: Support from family, friends and health care providers can also have a considerable impact on the health status of a person. Establishing a support network for a participant suffering from illness can provide them with a positive environment in which they can cope with their condition. A health care provider can also play a crucial role in this process by motivating family and friends of the participant to be supportive and attentive to their needs.

Access to recommended care: While recommended healthcare services may not reach every single person in need of them, access to these services can be improved, and the quality of care that participants receive from health care providers is something that can be controlled. With adequate training, health care providers can function as key resources for participants. In **Module 2**, communication and organization skills necessary to deliver adequate care are outlined.

Non-modifiable Factors

Income and Social Status: Higher income and social status are linked to better health. Poverty is both a cause and a consequence of poor health. The greater the gap between the rich and the poor, the more inequality there is, and therefore there is a greater difference in health.

Education: Low education levels are linked with poor health, more stress, and lower self-confidence.

Physical Environment: Safe water and clean air, healthy workplaces, and safe houses, communities and roads, all contribute to good health.

Genetics: Genes play an important role in determining the health status of a person. They play a part in determining lifespan, physical and mental health, and the likelihood of developing certain illnesses.

Gender and Age: People may be more likely to suffer from different types of diseases at different ages, and whether they are male or female may affect their likelihood of developing certain diseases.

Remember:
There are both modifiable and non-modifiable determinants of health.
Some modifiable factors are:

- Lifestyle
- Social environment
- Access to recommended care

Learning the counselling techniques in later modules will allow you to suggest methods for better control of these factors.

Discussion Question

A 64 year old is an employee at the local supermarket and he has a family history of diabetes. Although his occupation keeps him active, he does not eat a healthy diet. His family members do not support or intervene in his behaviour, which has put him at further risk for developing diabetes.
Discuss the modifiable and non-modifiable determinants of health for this person.

Section 1.2: Disease

In this section, the concept of disease is explored in more detail. A broad definition of disease is that it is an abnormal condition that affects a person. Diseases can often be easily identified by specific signs and symptoms and this section will provide more detail on some common disease types and how they present themselves.

In this section, you will also learn to differentiate between communicable and non-communicable diseases, and by the end of the section you will be able to identify the consequences of living with disease.

1.2.1. Definition of Disease

The term **disease** broadly refers to any condition that impairs function of the human body. 'Disease' can be used to describe *infectious* diseases such as HIV, malaria, or influenza. These conditions are the result of the presence of disease-causing agents (e.g. viruses, bacteria) that can be transferred between persons. In contrast, diseases like cardiovascular disease, diabetes and cancer are considered to be *non-infectious* diseases, since they are not caused by a disease-causing agent and they cannot be transferred between persons.

Some diseases like the common cold or diarrhea last for a few days, after which the affected individuals are cured and can return to their routine activities. These diseases are called **acute diseases**. On the other hand, some diseases, like cardiovascular disease and diabetes, may last for the rest of an individual's lifetime. Those lifelong diseases are called **chronic diseases**.

Most acute diseases like influenza can be cured with simple medications or protected against through vaccination. However, most chronic diseases such as diabetes, high blood pressure, or cardiovascular disease, do not have a cure and have to be managed through lifestyle changes and medications. This is a very important point which should be conveyed to program participants. **Chronic diseases require lifelong treatment**. The progression of these diseases can be slowed if they are managed properly with lifestyle modifications and medication, but can also worsen if left untreated. You will discuss the importance of treatment adherence further in **Module 6**.

> **Remember**:
> Disease is defined as a condition which impairs function of the human body. Acute diseases are short term diseases while chronic diseases are long term.

Discussion Question

A 65 year old retired teacher shows no outward signs of disease but complains of occasional headaches. The teacher was diagnosed with diabetes in his late 40s but he insists that it is under control. However, he has not seen a physician and has not taken any medications to treat his condition in years. Classify his condition as either an acute or chronic disease and give some reasons for why he might report feeling this way.

1.2.2. Communicable vs. Non-communicable diseases

Diseases can be divided into two broad categories as highlighted above: communicable diseases and non-communicable diseases. A brief description of each is given below, which will help you classify diseases into these two broad categories.

Communicable Diseases

A communicable disease is one that can spread from one person to another. These diseases can be transmitted directly through contact with another person, or indirectly through the air, soil, water, food, or a vector (e.g. a mosquito). HIV, diarrhea, common cold, malaria, and dengue fever are just a few examples of communicable diseases with different modes of transmission (**Table 2**).

Table 2. Modes of transmission of some common communicable diseases

Modes of Transmission	Mechanism	Example
Direct Transmission	Direct contact (blood or sexual transmission)	Scabies
	From mother to unborn child	HIV/AIDS
	From soil	Tetanus
	Animal bites	Rabies
Indirect Transmission	Through food, water, blood	Diarrhea
	Through mosquitoes, flies	Malaria
	Through air, dust	Common cold
	Unsanitary conditions	Typhoid

The WHO reports that diarrheal diseases and HIV/AIDS are the leading worldwide causes of death from communicable diseases. Most of these deaths occur in low- to middle-income countries.

> **Remember**:
> Communicable diseases can be transferred from one person to another through direct and indirect transmission.

Non-communicable diseases

A non-communicable disease is one that cannot spread from one person to another. The underlying causes of these diseases are often complex, because a variety of factors can result in the diseased condition. Some factors that may contribute to these types of diseases are lifestyle choices (diet and exercise), genetics, and the environment. Common examples of non-communicable diseases are cardiovascular (heart) disease, diabetes, cancer, asthma, and allergies.

Non-communicable diseases usually develop over a long period of time and some of them may even be lifelong. These diseases do not have a definite starting point, which means that a person may have a non-communicable disease for a long period and not know about it. Oftentimes a person that looks completely healthy and shows no signs of disease may suffer from a cardiovascular event like a stroke or heart attack, because their underlying condition went unchecked. This is what makes non-communicable diseases so hard to control and manage. While it is true that many non-communicable diseases cannot be cured, they can all be managed and controlled, or even prevented, by providing individuals better access to healthcare services.

> **Remember**:
> Non-communicable diseases cannot be transferred from one person to another. These diseases require proper management and control strategies.

1.2.3. Consequences of Disease

Diseases can have many consequences for the individuals with the disease, their families, and even their communities. Potential consequences for each group are outlined below.

I. Effects on the Individual

i. Physical Symptoms:

The individual suffering from the disease may experience pain, fatigue, and other physical symptoms, which may have an impact on how they live their daily life. For example, participants with communicable diseases such as influenza may have a fever, headache, and aching in their joints. Similarly, participants with non-communicable diseases such as heart disease may report chest pains, shortness of breath, and dizziness. The cardiovascular system and its associated diseases are covered in greater depth in **Module 3** and **Module 4**.

ii. Emotional Problems:

As we identified earlier in this module, disease is not simply the absence of physical symptoms. Individuals suffering from disease may not show any outward symptoms, yet they may still have emotional problems in their daily lives due to stress, a sense of frustration, and feelings of helplessness. These emotional problems can be further increased when individuals that show outward signs of disease feel a sense of rejection from society because they are not normal. In those instances, it is not surprising to see that individuals with physical symptoms also suffer from psychological problems such as depression and anxiety.

iii. Financial Problems:

Imagine that a 50 year old father of 4 children, who is the sole financial provider for his family, has a heart attack. As a consequence, he will have to take an extended leave from work and may even be fired. This will result in many financial problems for not only the father but also his family, which are discussed below.

II. Effects on the Family

i. Financial Problems:

Continuing from the previous example, it is easy to imagine that the father's family will suffer from many financial difficulties in the months and years ahead. During the father's absence in hospital, and possibly for rehabilitation, it may be necessary for other family members to work and try to keep the household running. This can result in other members of the family also becoming stressed and developing psychological problems of their own. Furthermore, the cost of treatment may also become a significant burden on the family, which can result in a decreased quality of living for the entire household.

ii. Social Problems:

In some cultures, disease is seen as a punishment. The father's heart attack may result in the family becoming isolated and losing some of the social support mechanisms that are important, especially in rural settings. This feeling of isolation may again contribute to psychological problems for members of the family. Caregiver burnout may also occur. Sometimes people that take care of diseased individuals are also overburdened with tasks.

III. Effects on the Community

i. Financial Problems:

If many members of the same community have a disease, this can have a significant impact on the economic productivity of that community. If a large number of working age people are ill, the total number of man-hours worked will decrease, which will result in a financial burden on the rest of the community. Furthermore, if a large number of people are ill, this will also mean that caregivers from the community – professionals, family or friends – have to look after them, which will also result in lower community productivity.

ii. Social Problems:

Similar to the problems faced by a family with sick individuals, a community that has a large number of sick individuals may become isolated and thus suffer from not only financial problems but also social problems. This would also have an impact on how healthy participants in the community perceive sick individuals, and might result in the further isolation of sick individuals. Rampant disease in a small community can serve to deteriorate social connections, which are especially important in rural settings. **Stigma** can play an important role in the further isolation of communities. A stigma is a set of negative and often unfair beliefs that a society or group of people have about something. In Canada, for example, the Aboriginal community is often stigmatized because of their history with mental illness and alcoholism.

> **Remember**:
> Diseases can have consequences for individuals, their families, and their entire communities.

Section 1.3: Risk Factors

This section is an introduction to risk factors, what they mean, and the different types of risk factors that are most commonly associated with a specific disease. This section also introduces and discusses the differences between modifiable and non-modifiable risk factors.

Learning objectives – at the end of this section you should be able to:

- Define the term 'risk factor'
- Classify risk factors as either modifiable or non-modifiable
- Give some common examples of risk factors

1.3.1. Risk Factors

A risk factor can be defined as a behaviour or condition that increases a person's chances of developing a new disease or worsening an existing disease. Reduction in risk factors can result in reduction of the risk for disease. For example, a person who smokes, eats an unhealthy diet, and does not exercise, has an increased chance of developing diseases such as heart disease, cancer, and diabetes. We can classify these lifestyle choices as behaviours which increase the chance of developing a disease. Therefore, poor lifestyle choices can be considered as risk factors for developing disease.

Similarly, other risk factors for disease can be the person's living environment or social conditions. For example, a child born in an impoverished area with unsanitary conditions has an increased chance of developing diseases such as diarrhea and typhoid fever. We can classify the child's environment as being a condition that increases their chance of developing a disease. Therefore, poverty and unsanitary conditions can also be risk factors.

A single disease can have many risk factors, and a single risk factor can be associated with many diseases. For example, smoking, eating fatty foods and physical inactivity are all risk factors for developing a heart attack. At the same time, a risk factor like smoking is associated with many diseases including heart attack, lung cancer, and high blood pressure.

A risk factor has the following characteristics:

i. **Risk factors precede the disease:** A risk factor is always present before the onset of the disease with which it is associated, possibly for many years. For example, a person may smoke for many years before developing lung cancer.
ii. **Risk factors are associated with the disease:** In most cases, whenever the disease is present, one or more risk factors are also present. People with diabetes are often overweight. Therefore, obesity and diabetes are commonly diagnosed together.
iii. **Reduction in risk factors decreases a person's chances of developing a disease and can also slow the progression of an existing disease:** Making better lifestyle choices such as quitting smoking, eating healthier, or exercising more, can significantly reduce a person's chance of developing a disease.

> **Remember**:
> A risk factor is a behaviour or condition that increases an individual's chances of developing a disease. Risk factors always precede the disease and are also associated with the disease. Reducing the number and severity of risk factors can decrease the probability of developing a disease.

1.3.2. Non-Modifiable vs. Modifiable Risk Factors

Non-Modifiable Risk Factors

Non-modifiable risk factors are risk factors that **cannot be changed**. Age, gender, family history, race, and genetic factors are some examples of non-modifiable risk factors. We cannot do anything to alter or reduce these in any way. Nevertheless, they play an important role in the control of disease. Their presence signals an increased risk of disease.

For example, in comparison to people under the age of 50 years, people above the age of 50 years are more likely to have high blood pressure, which would put them at higher risk for a heart attack. Therefore, people above the age of 50 must get their blood pressure checked regularly. Similarly, men and women are likely to develop different types of cancers, so gender can also influence the type of disease you are predisposed (more at risk) to developing. Family history of heart disease and diabetes often results in later generations having these same problems. Some ethnicities may also be more likely to develop certain diseases, because of genetic inheritance.

Modifiable Risk Factors

Modifiable risk factors are risk factors that **can be changed**. We can alter our habits and behaviours in a way so as to alter these risk factors, thus reducing our chance of developing the disease.

For example, smoking puts a person at risk for developing lung cancer, but through behavioural modification it is possible for this person to stop smoking and therefore reduce the risk of developing lung cancer. Similarly, a person who is overweight is at risk for diabetes, but it is possible for them to lose weight and therefore reduce the risk of developing diabetes. As another example, an existing condition such as high blood pressure can be managed with appropriate interventions, but if left untreated, high blood pressure can result in cardiovascular disease.

Later modules will build upon this module's overview on health and disease and provide the training necessary to manage participants with, or at risk of, cardiovascular disease.

> **Remember**:
> A non-modifiable risk factor such as age, gender, ethnicity and genetics cannot be changed, while modifiable risk factors such as lifestyle choices can be changed by altering behaviours.

Activity: Classification of Risk Factors

Take 2 minutes to classify each of the following risk factors by placing a checkmark in the appropriate column.

Risk Factor	Modifiable	Non-modifiable
Age		
Smoking		
Diet		
Exercise		
Gender		

Module 1 Post-Test

Instructions: Read the following statements carefully and tick [√] the appropriate column. If you are unsure of any answer you may tick the "Don't Know" column. The time allotted to you is 5 minutes.

Number	Question	True	False	Don't Know
1	Health is a state of complete physical, mental, and social well-being, and is not merely an absence of disease.			
2	The health status of a person should not be of concern as long as they are contributing economically to society.			
3	As people age they become less vulnerable to chronic illnesses such as hypertension and diabetes.			
4	Lifestyle choices such as smoking, level of physical activity and diet have a significant effect on the health status of a person.			
5	Family history of disease is an important factor in a person's health status.			
6	Some communicable diseases are diabetes, hypertension and cancer.			
7	A risk factor is a condition or a behaviour that increases an individual's chances of developing a disease.			
8	Age, gender and race are all modifiable risk factors that can reduce a person's chance of developing diseases.			
9	Smoking, diet and exercise are all non-modifiable risk factors, and cannot be changed through counselling.			
10	Diseases have significant consequences for individuals, their families, and the surrounding community.			