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## UNIT 3 LIFESTYLE DISEASES

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- 3.3 Major Life Style Diseases: Diabetes
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### 3.1 INTRODUCTION

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Lifestyle diseases are ailments that are primarily based on the day to day habits of people. Habits that detract people from activity and push them towards a sedentary routine can cause a number of health issues that can lead to chronic non-communicable diseases that can have near life-threatening consequences.

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### 3.2 MAJOR LIFESTYLE DISEASES: CVD (CARDIOVASCULAR DISEASES)

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There are four major lifestyle diseases: CVD (Cardiovascular diseases), Diabetes, Cancer, Chronic Respiratory Diseases.

1. **CVD (Cardiovascular diseases)**- they are a group of disorders of the heart and blood vessels and may include:
  - a. Ischaemic heart disease/Coronary heart disease (CHD):
  - b. Stroke/Cerebrovascular disease
  - c. Peripheral arterial disease
  - d. Congenital heart disease

CVDs are the number 1 cause of death globally and account for more than 17 million deaths per year. The number is estimated to rise by 2030 to more than 23 million a year. It is estimated that by 2030, CVD will be responsible for more deaths in low income countries than infectious diseases, maternal and perinatal conditions, and nutritional disorders combined. CVDs are the face of lifestyle diseases and manifest in a number of ways, such as:

**a. Coronary heart disease (CHD):** Also known as coronary heart disease and ischaemic heart disease, CHD is one of the most common types of heart

problems faced today and is characterized by a reduction or blockage in the flow of oxygen-rich blood to the heart muscle. This puts exaggerated strain on the heart, which can lead to:

- a) **Angina** – chest pain caused by lack of flow of blood to the heart
  - b) **Heart attacks** – caused when the blood flow to the heart is suddenly but completely blocked
  - c) **Heart failure** – the failure of the heart to pump blood properly to the rest of the body
- b. Cerebrovascular disease (strokes and TIAs):** Cerebrovascular disease is the disease of blood vessels supplying blood to the brain. When the blood supply to the brain is cut off, a person suffers a stroke, which can be lethal. A transient ischaemic attack, popularly known as a mini-stroke, occurs when the blood supply to the brain is temporarily blocked. The acronym FAST is used to signify the symptoms of a stroke or TIA<sup>10</sup>. It stands for:

- a. **Face:** Face drooping on one side is the most common visible symptom, followed by dropping of mouth or eye.
- b. **Arms:** Weakness or numbness in one or both arms doesn't allow a person to raise both of his or her hands up and hold them there.
- c. **Speech:** Slurred or garbled speech in some cases, and in other cases: no speech
- d. **Time:** It is time to call the emergency services if you see any of these symptoms.

Other symptoms include:

- i. Blurred or complete loss of vision in one or both eyes
  - ii. One-sided weakness or numbness of the body
  - iii. Sudden memory loss or confusion
  - iv. Sudden dizziness combined with any of the above mentioned symptoms can be a definite sign
- c. Peripheral arterial disease:** Peripheral arterial diseases is a disease of blood vessels supplying the arms and legs. It happens when there is a blockage in the arteries to the limbs (usually the legs). Signs to watch out for:
- a) Dull or cramping pain that gets worse with walking and better with rest
  - b) Hair loss on the limbs
  - c) Numbness or weakness in the limbs
  - d) Persistent ulcers on the legs and feet

- d. Congenital heart disease:** Congenital heart disease is a problem with the structure of the heart, i.e. malformations of heart structure, that exist at birth. The problem can range from a small hole in the heart to a more severe problem such as a defective heart muscle. Some of the common symptoms are shortness of breath and having trouble exercising. In infants and younger kids, cyanosis, a bluish tint to the skin, fingernails and lips can be an important marker. Risk factors include:
- i. Use of certain medications, drugs or alcohol during pregnancy
  - ii. Viral infections in the mother in the first trimester
  - iii. Genetic problems or issues with chromosomes of the child .

**3.2.1 Managing CVD:** Depending on the type of CVD, an appropriate treatment plan can help alleviate the problem/s. There are a number of treatments ranging from medication to surgeries that can help, however, prevention is always recommended over treatment. To prevent CVD, one must:

- a) Stop smoking
- b) Have a balanced diet with plenty of fiber
- c) Exercise regularly (>150 minutes of aerobic activity per week)
- d) Maintain a healthy weight and body mass index (BMI; aim for a BMI below
- e) Cut down on alcohol

### **3.3 MAJOR LIFESTYLE DISEASES: DIABETES**

Diabetes is a metabolism disorder that affects the way the body used food for energy and physical growth. There are 4 types of diabetes: Type 1, Type 2, Gestational, and Pre-Diabetes (Impaired Glucose Tolerance). Type 2 is the most common diabetes in the world and is caused by modifiable behavioural risk factors.

Diabetes, often referred to by doctors as diabetes mellitus, describes a group of metabolic diseases in which the person has high blood glucose (blood sugar), either because insulin production is inadequate, or because the body's cells do not respond properly to insulin, or both. Patients with high blood sugar will typically experience polyuria (frequent urination), they will become increasingly thirsty (polydipsia) and hungry (polyphagia).

#### **3.3.1 Types of Diabetes:**

1. **Type 1 diabetes:** The body does not produce insulin. Some people may refer to this type as insulin-dependent diabetes, juvenile diabetes, or early-onset diabetes. People usually develop type 1 diabetes before their 40th year, often in early adulthood or teenage years. Type 1 diabetes is nowhere near as common as type 2 diabetes.

Approximately 10% of all diabetes cases are type 1. Patients with type 1 diabetes will need to take insulin injections for the rest of their life. They must also ensure proper blood-glucose levels by carrying out regular blood tests and following a special diet.

- 2. Type 2 diabetes:** The body does not produce enough insulin for proper function, or the cells in the body do not react to insulin (insulin resistance). Approximately 90% of all cases of diabetes worldwide are type 2. Some people may be able to control their type 2 diabetes symptoms by losing weight, following a healthy diet, doing plenty of exercise, and monitoring their blood glucose levels. However, type 2 diabetes is typically a progressive disease - it gradually gets worse - and the patient will probably end up taking insulin, usually in tablet form. Overweight and obese people have a much higher risk of developing type 2 diabetes compared to those with a healthy body weight. People with a lot of visceral fat, also known as central obesity, belly fat, or abdominal obesity, are especially at risk. Being overweight/obese causes the body to release chemicals that can destabilize the body's cardiovascular and metabolic systems. Being overweight, physically inactive and eating the wrong foods all contribute to our risk of developing type 2 diabetes. The scientists believe that the impact of sugary soft drinks on diabetes risk may be a direct one, rather than simply an influence on body weight. The risk of developing type 2 diabetes is also greater as we get older. Experts are not completely sure why, but say that as we age we tend to put on weight and become less physically active. Those with a close relative who had/ had type 2 diabetes, people of Middle Eastern, African, or South Asian descent also have a higher risk of developing the disease. Men whose testosterone levels are low have been found to have a higher risk of developing type 2 diabetes.

Diabetes is a Metabolism Disorder Diabetes (diabetes mellitus) is classed as a metabolism disorder. Metabolism refers to the way our bodies use digested food for energy and growth. Most of what we eat is broken down into glucose. Glucose is a form of sugar in the blood - it is the principal source of fuel for our bodies. When our food is digested, the glucose makes its way into our bloodstream. Our cells use the glucose for energy and growth. However, glucose cannot enter our cells without insulin being present - insulin makes it possible for our cells to take in the glucose. Insulin is a hormone that is produced by the pancreas. After eating, the pancreas automatically releases an adequate quantity of insulin to move the glucose present in our blood into the cells, as soon as glucose enters the cells blood-glucose levels drop. A person with diabetes has a condition in which the quantity of glucose in the blood is too elevated (hyperglycemia). This is because the body does not produce enough insulin, produces no insulin, or has cells that do not respond properly to the insulin the pancreas produces. This results in too much glucose building up in the blood. This excess blood glucose eventually passes out of the body in urine. So, even though the blood has plenty of glucose, the cells are not getting it for their essential energy and growth requirements.

In this unit, you have read about major lifestyle diseases CVD (cardiovascular diseases) and diabetes. Now, answer the questions given in check your progress 1.

### Check Your Progress 1

**Note:** a) Answer the following questions in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

1. What is life style diseases?

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2. What is diabetes? Explain briefly?

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## 3.4 MAJOR LIFESTYLE DISEASES: CANCER

Cancer- Cancer affects different parts of the body and is characterized by a rapid creation of abnormal cells in that part and can invade other parts of the body as well. More than 7 million people die of cancer each year and 30% of those diseases are attributed to lifestyle choices.

What is cancer? Cancer is the uncontrolled growth of abnormal cells anywhere in the body. These abnormal cells are termed cancer cells, malignant cells, or tumor cells. These cells can infiltrate normal body tissues. Many cancers and the abnormal cells that compose the cancer tissue are further identified by the name of the tissue that the abnormal cells originated from (for example, breast cancer, lung cancer, and colorectal cancer). When damaged or unrepaired cells do not die and become cancer cells and show uncontrolled division and growth - a mass of cancer cells develop. Frequently, cancer cells can break away from this original mass of cells, travel through the blood and lymph systems, and lodge in other organs where they can again repeat the uncontrolled growth cycle. This process of cancer cells leaving an area and growing in another body area is termed metastatic spread or metastasis. For example, if breast cancer cells spread to a bone, it means that the individual has metastatic breast cancer to bone.

### 3.4.1 RISK FACTORS FOR CANCER

1. Heredity
2. Ionizing radiation
3. Chemical substances
4. Dietary factors – Meat, energy balance, fat, protein, alcohol, nitrates
5. Estrogens

6. Viruses
7. Stress
8. Age

**3.4.2 What are cancer symptoms and signs?** Symptoms and signs of cancer depend on the type of cancer, where it is located, and/or where the cancer cells have spread. For example, breast cancer may present as a lump in the breast or as nipple discharge while metastatic breast cancer may present with symptoms of pain (if spread to bones), extreme fatigue (lungs), or seizures (brain). A few patients show no signs or symptoms until the cancer is far advanced. Seven warning signs and/or symptoms that a cancer may be present, and which should prompt a person to seek medical attention are:

1. Change in bowel or bladder habits
2. A sore throat that does not heal
3. Unusual bleeding or discharge (for example, nipple secretions or a "sore" that will not heal that oozes material)
4. Thickening or lump in the breast, testicles, or elsewhere
5. Indigestion (usually chronic) or difficulty swallowing
6. Obvious change in the size, color, shape, or thickness of a wart or mole
7. Nagging cough or hoarseness

Other signs or symptoms may include the following

- Unexplained loss of weight or loss of appetite
- A new type of pain in the bones or other parts of the body that may be steadily worsening, or come and go, but is unlike previous pains one has had before
- Persistent fatigue, nausea, or vomiting
- Unexplained low-grade fevers with may be either persistent or come and go
- Recurring infections which will not clear with usual treatment

### **3.4.3 What are the different types of cancer?**

- Carcinoma: Cancer that begins in the skin or in tissues that line or cover internal organs -- "skin, lung, colon, pancreatic, ovarian cancers" .
- Sarcoma: Cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue -- "bone, soft tissue cancers".



- Leukemia: Cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and enter the blood -- "leukemia".
- Lymphoma and myeloma: Cancers that begin in the cells of the immune system – "lymphoma".
- Central nervous system cancers: Cancers that begin in the tissues of the brain and spinal cord -- "brain and spinal cord tumors".

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### **3.5 LIFESTYLE DISEASES: CHRONIC RESPIRATORY DISEASES**

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Some of the most under-diagnosed conditions, chronic respiratory diseases (CRD) are a potent cause of death globally with 90% of the deaths taking place in low-income countries. Chronic obstructive pulmonary disease (COPD) and asthma are the two main types of CRDs. Chronic respiratory diseases are among the most common non-communicable diseases worldwide, largely due to the ubiquity of noxious environmental, occupational, and behavioural inhalational exposures. In addition to chronic obstructive pulmonary disease (COPD) and asthma, chronic respiratory diseases include interstitial lung disease, pulmonary sarcoidosis, and pneumoconioses, such as silicosis and asbestosis. Unfortunately, chronic respiratory diseases have received proportionately less public attention and less research funding than other disease entities such as cardiovascular disease, cancer, stroke, diabetes, and Alzheimer's disease. Therefore, to better inform prevention, screening, treatment, and research efforts dedicated to chronic respiratory diseases, it is crucial to understand their prevalence, morbidity, and mortality, both on global and regional scales.

In *The Lancet Respiratory Medicine*, Joan Soriano and colleagues leverage the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2017 to estimate the prevalence and attributable health burden of chronic respiratory diseases. They found that close to 545 million people in the world had a chronic respiratory disease in 2017, an increase of 39.8% since 1990. The high-income super-region had the highest prevalence of chronic respiratory diseases, while south Asia and sub-Saharan Africa had, somewhat surprisingly, the lowest prevalence. The most prevalent chronic respiratory diseases were COPD (3.9% global prevalence) and asthma (3.6%). Chronic respiratory diseases accounted for 3.9 million deaths in 2017 (an increase of 18.0% since 1990) and were responsible for 1470 disability-adjusted life-years (DALYs) per 100 000 individuals (112.3 million total DALYs, an increase of 13.3% since 1990). South Asia had the highest mortality attributable to chronic respiratory disease, while sub-Saharan Africa had the lowest. COPD and asthma were the top causes of chronic respiratory disease-related deaths worldwide, but interstitial lung disease and pulmonary sarcoidosis were the second leading cause of death in the high-income, Latin America and the Caribbean, and central Europe, eastern Europe, and central Asia super-regions. Smoking accounted for the highest proportion of disability attributable to chronic respiratory disease in all regions for men. However, for women, the leading risk factor for

disability varied by region: household air pollution from solid fuel use in south Asia and sub-Saharan Africa, exposure to ambient particulate matter in the southeast Asia, east Asia, and Oceania and the north Africa and Middle East super-regions, and smoking in all other super-regions.

These findings not only confirm that chronic respiratory diseases are common and are associated with substantial morbidity and mortality, but also highlight the heterogeneity of chronic respiratory disease-related health burden and risk factors by world region and sex. However, some of these estimates should be interpreted with caution. For example, the lower prevalence of chronic respiratory diseases in south Asia and sub-Saharan Africa might be due to under diagnosis in settings that lack or under utilize diagnostic capabilities. Furthermore, lower mortality in sub-Saharan Africa than in other regions could reflect differences in the age distribution of the population towards younger individuals, in whom deaths from communicable diseases occur in greater frequency than do deaths from chronic diseases.

In this unit, you have read about major lifestyle diseases –cancer and chronic respiratory diseases. Now, answer the questions given in check your progress 2.

### **Check Your Progress 2**

**Note:** a) Answer the following questions in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

1. What are the different types of cancer?

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2. What are chronic respiratory diseases? Briefly explain?

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### **3.6 LET US SUM UP**

Lifestyle diseases characterize those diseases whose occurrence is primarily based on the daily habits of people and are a result of an inappropriate relationship of people with their environment. The main factors contributing to lifestyle diseases include bad food habits, physical inactivity, wrong body posture, and disturbed biological clock.



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### 3.7 REFERENCES AND SELECTED READINGS

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file:///C:/Users/NEW%20WORLD/Downloads/Lifestleart.pdf

file:///C:/Users/NEW%20WORLD/Downloads/Chapter-5.pdf

[https://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(20\)30157-0/fulltext](https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(20)30157-0/fulltext)

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### 3.8 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

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#### Check Your Progress 1

1. What is life style diseases?

**Answer:** Lifestyle diseases are ailments that are primarily based on the day to day habits of people. Habits that detract people from activity and push them towards a sedentary routine can cause a number of health issues that can lead to chronic non-communicable diseases that can have near life-threatening consequences.

2. What is diabetes? Explain briefly?

**Answer:** Diabetes is a metabolism disorder that affects the way the body used food for energy and physical growth.

#### Check Your Progress 2

1. What are the different types of cancer?

**Answer:** Carcinoma: Cancer that begins in the skin or in tissues that line or cover internal organs -- Sarcoma: Cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue

Leukemia: Cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and enter the blood -- "leukemia".

2. What are chronic respiratory diseases? Briefly explain?

**Answer:** Chronic respiratory diseases are among the most common non-communicable diseases worldwide, largely due to the ubiquity of noxious environmental, occupational, and behavioural inhalational exposures.