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# CANCER EDUCATION: TOWARDS AWARENESS IN SOCIETY

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## Abstract:-

Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cancer can start almost anywhere in the human body, which is made up of trillions of cells. Normally, human cells grow and multiply (through a process called cell division) to form new cells as the body needs them. When cells grow old or become damaged, they die, and new cells take their place. This paper gives knowledge about how cancer develops and how we can take prevention about cancer and awareness about cancer.

**"To ensure good health. Eat lightly, breath deeply, live moderately, cultivate cheerfulness, and maintain an interest in life."**

**Willium London**

**"Good Health is not something we can buy. However, it can be an extremely valuable savings account."**

**"Health is the best Wealth."**

### What is cancer: -

Cancer is a group of diseases where abnormal cells grow out of control and crowd out normal cells. It affects 1 in 3 people in the United States. Chances are that you or someone you know has been affected by cancer. Here is some information to help you better understand what cancer is.

One defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs; the latter process is referred to as metastasis. Widespread metastases are the primary cause of death from cancer.

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Cancer is a generic term for a large group of diseases that can affect any part of the body. Other terms used are malignant tumours and neoplasms. One defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then

invade adjoining parts of the body and spread to other organs; the latter process is referred to as metastasis. Widespread metastases are the primary cause of death from cancer.

Sometimes this orderly process breaks down, and abnormal or damaged cells grow and multiply when they shouldn't. These cells may form tumors, which are lumps of tissue. Tumors can be cancerous or not cancerous begin Cancerous tumors spread into, or invade, nearby tissues and can travel to distant places in the body to form new tumors (a process called metastasis. Cancerous tumors may also be called malignant tumuors . Many cancers form solid tumors, but cancers of the blood, such as leukaemia generally do not.

**How Cancer cells differ from normal cells in many ways. For instance, cancer cells:**

- Grow in the absence of signals telling them to grow. Normal cells only grow when they receive such signals.
- Ignore signals that normally tell cells to stop dividing or to die.
- Invade into nearby areas and spread to other areas of the body. Normal cells stop growing when they encounter other cells, and most normal cells do not move around the body.
- Tell blood vessels to grow toward tumors. These blood vessels supply tumors with oxygen and nutrients and remove waste products from tumors.
- The immune system normally eliminates damaged or abnormal cells.
- Trick the immune system into helping cancer cells stay alive and grow. For instance, some cancer cells convince immune cells to protect the tumor instead of attacking it.
- Accumulate multiple changes in their chromosomes such as duplications and deletions of chromosome parts. Some cancer cells have double the normal number of chromosomes.
- Rely on different kinds of nutrients than normal cells. In addition, some cancer cells make energy from nutrients in a different way than most normal cells. This lets cancer cells grow more quickly.

## ❖ Key facts :-

1. Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths.

2.The most common cancers are breast, lung, colon and rectum and prostate cancers.

Around one-third of deaths from cancer are due to tobacco use, high body mass index, alcohol consumption, low fruit and vegetable intake, and lack of physical activity. In addition, air pollution is an important risk factor for lung cancer.

3.Cancer-causing infections, such as human papillomavirus (HPV) and hepatitis, are responsible for approximately 30% of cancer cases in low- and lower-middle-income countries. Many cancers can be cured if detected early and treated effectively.

## ❖ Causes: -

Cancer arises from the transformation of normal cells into tumour cells in a multi-stage process that generally progresses from a pre-cancerous lesion to a malignant tumour. These changes are the result of the interaction between a person's genetic factors and three categories of external agents, including: physical carcinogens, such as ultraviolet and ionizing radiation; chemical carcinogens, such as asbestos, components of tobacco smoke, alcohol, aflatoxin (a food contaminant), and arsenic (a drinking water contaminant); and biological carcinogens, such as infections from certain viruses, bacteria, or parasites.

## ❖ Risk factors:-

1.Tobacco use, alcohol consumption, unhealthy diet, physical inactivity and air pollution are risk factors for cancer and other noncommunicable diseases.

2.Some chronic infections are risk factors for cancer; this is a particular issue in low- and middle-income countries. Approximately 13% of cancers diagnosed in 2018 globally were attributed to carcinogenic infections, including Helicobacter pylori, human papillomavirus (HPV), hepatitis B virus, hepatitis C virus, and Epstein-Barr virus . Hepatitis B and C viruses and some types of HPV increase the risk for liver and cervical cancer, respectively. Infection with HIV increases the risk of developing cervical cancer .

## HOW TO TAKE PREVENTION ABOUT CANCER ;-

- ❖ Not using tobacco;
- ❖ Maintaining a healthy body weight;
- ❖ Eating a healthy diet, including fruit and vegetables;
- ❖ Doing physical activity on a regular basis;
- ❖ Avoiding or reducing consumption of alcohol;

- Getting vaccinated against HPV and hepatitis B if you belong to a group for which vaccination is recommended;
- Avoiding ultraviolet radiation exposure (which primarily results from exposure to the sun and artificial tanning devices) and/or using sun protection measures;
- Ensuring safe and appropriate use of radiation in health care (for diagnostic and therapeutic purposes);
- Minimizing occupational exposure to ionizing radiation; and
- Reducing exposure to outdoor air pollution and indoor air pollution, including radon (a radioactive gas produced from the natural decay of uranium, which can accumulate in buildings — homes, schools and workplaces).

## ❖ Early detection: -

❖ Cancer mortality is reduced when cases are detected and treated early. There are two components of early detection: early diagnosis and screening.

## ❖ Early Diagnosis: -

When identified early, cancer is more likely to respond to treatment and can result in a greater probability of survival with less morbidity, as well as less expensive treatment. Significant improvements can be made in the lives of cancer patients by detecting cancer early and avoiding delays in care.

Early diagnosis consists of three components: being aware of the symptoms of different forms of cancer and of the importance of seeking medical advice when abnormal findings are observed; access to clinical evaluation and diagnostic services; and timely referral to treatment services.

Early diagnosis of symptomatic cancers is relevant in all settings and the majority of cancers. Cancer programmes should be designed to reduce delays in, and barriers to, diagnosis, treatment and supportive care.

## ❖ Screening: -

Screening aims to identify individuals with findings suggestive of a specific cancer or pre-cancer before they have developed symptoms. When abnormalities are identified during screening, further tests to establish a definitive diagnosis should follow, as should referral for treatment of cancer is proven to be present.

Screening programmes are effective for some but not all cancer types and in general are far more complex and resource-intensive than early diagnosis as they require special equipment and dedicated personnel. Even when screening programmes are established, early diagnosis programmes are still necessary to identify those cancer cases occurring in people who do not meet the age or risk factor criteria for screening.

Patient selection for screening programmes is based on age and risk factors to avoid excessive false positive studies. Examples of screening methods are:

HPV test (including HPV DNA and mRNA test), as preferred modality for cervical cancer screening; and mammography screening for breast cancer for women aged 50–69 residing in settings with strong or relatively strong health systems. Quality assurance is required for both screening and early diagnosis programmes.

There are many different kinds of cancer, but they all involve abnormal cells. Cancers often have these features:

**Gene changes (mutations):** Cancer cells have changes in their genes that make them abnormal. Some of these gene changes may be passed down from a parent (inherited mutations), while others may happen later in life (acquired mutations).

**Uncontrolled cell growth:** Most abnormal cells die off or are unable to reproduce. But cancer cells can keep growing and dividing to make more abnormal cells. Cancer cells can crowd out normal cells.

**Tumour formation:** Not all cancer cells form tumors, and not all tumors are cancer. But many types of cancer cells do clump together to form tumors.

**Cancer spread (metastasis):** Cancer cells can invade nearby tissues, and many can even spread to other parts of the body.

Many types of abnormal cell growths have some of these features, but not all of them are cancer. For example:

**Tumors** are lumps or masses of abnormal cells (neoplasms) that can be malignant (cancer) or benign (not cancer).

Pancreas are abnormal cells that are not cancer but could become cancer over time.

**Cysts: -**

Cysts are abnormal sac-like growths filled with air, fluid, pus, or tissue. Most cysts do not have abnormal cells in them and are not cancer.

## ❖ Causes of Cancer: -

Cancer starts when something goes wrong in the normal process of cells growing and dividing to make new cells. A cell's genes (pieces of DNA that tell the cell how to function) change and make the cell abnormal.
Cancer starts when something goes wrong in the normal process of cells growing and dividing to make new cells. A cell's genes (pieces of DNA that tell the cell how to function) change and make the cell abnormal. Most cells die if they become abnormal, but some gene changes allow cells to survive, grow, and divide to make more abnormal cells.
Gene changes that lead to cancer can have many possible causes. Lifestyle habits, genes you get from your parents, and being exposed to certain chemicals or radiation can all play a role. Many times, there is no clear cause.

## ❖ Cancer is more than just one disease: -

There are many types of cancer. Most types also have subtypes based on features like what the cells look like under a microscope.
Cancer can develop anywhere in the body. It's usually named for the part of the body where it starts, even if it spreads. For example, if cancer starts in the breast and spreads to the lungs, it's still called breast cancer. It's not considered lung cancer, but metastatic breast cancer. Metastatic means it has spread to another part of the body.
Some cancers are also named for the type of cell they start in. For example, carcinomas start in the skin or the lining of organs, while sarcomas begin in bone, muscle, or connective tissue.

## ❖ Two main types of cancer: -

Cancers are often grouped into two main categories:

### 1. Blood (hematologic) cancers: -

start in blood cells or blood-forming tissues. These include leukaemia lymphoma, and multiple myeloma.

### a. Solid tumour cancers: -

develop in organs or tissues. The most common solid tumors are breast, prostate, lung, and colorectal cancers.

## ❖ Why cancer type matters:-

While all cancers involve uncontrolled cell growth, different types can behave in different ways. For example:

Some grow and spread fast, while others are slower.
Some depend on hormones to grow.
Some are more likely to stay in one place, while others spread more easily.

Some are treated with surgery; others respond better to radiation therapy or drugs such as chemotherapy, targeted therapy, or immunotherapy. For many cancers, more than one treatment is often used to get the best treatment outcome.

- It's very important to know the type (and subtype) of cancer before starting treatment, if possible. Knowing the exact type helps doctors know which treatment will work best.

## ❖ What is the cancer stage: -

When cancer is found, tests are done to see how big it is and whether it has spread. This is called staging the cancer.
A lower stage (like stage 1 or 2) means the cancer has either not spread or has spread to lymph nodes or just outside the primary site (the place it started). A higher stage (like stage 3 or 4) means it has spread farther.
The stage of a cancer is very important to know. Along with other testing on the tumour, doctors use the stage to figure out the best treatment options for a person.

## ❖ How does cancer spread?

Cancer cells have the unique ability to:

- Grow quickly and out of control
- Spread to other parts of the body
- Invade other organs and tissues
- When cancer cells break away from the original tumour, they can travel through the bloodstream or lymphatic lymph system to other parts of the body. Most of these cells die. But some might survive, settle in a new area, and form new tumours.

## ❖ Treatment: -

A correct cancer diagnosis is essential for appropriate and effective treatment because every cancer type requires a specific treatment regimen. Treatment usually includes surgery, radiotherapy, and/or systemic

therapy (chemotherapy, hormonal treatments, targeted biological therapies). Proper selection of a treatment regimen takes into consideration both the cancer and the individual being treated. Completion of the treatment protocol in a defined period of time is important to achieve the predicted therapeutic result.

Determining the goals of treatment is an important first step. The primary goal is generally to cure cancer or to considerably prolong life. Improving the patient's quality of life is also an important goal. This can be achieved by support for the patient's physical, psychosocial and spiritual well-being and palliative care in terminal stages of cancer.

Some of the most common cancer types, such as breast cancer, cervical cancer, oral cancer, and colorectal cancer, have high cure probabilities when detected early and treated according to best practices.

Some cancer types, such as testicular seminoma and different types of leukaemia and lymphoma in children, also have high cure rates if appropriate treatment is provided, even when cancerous cells are present in other areas of the body.

There is, however, a significant variation in treatment availability between countries of different income levels; comprehensive treatment is reportedly available in more than 90% of high-income countries but less than 15% of low-income countries.

## Conclusion :-

Cancer education promotes public awareness of risk factors, symptoms, and the importance of early detection and healthy lifestyle ultimately reducing cancer incidence and mortality. Fostering healthy behaviour, providing support and building community based social forces to sustain prevention practices.

## References :-

1. Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2019 global survey. Geneva: World Health Organization; 2020.

2.Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, et al. Global Cancer Observatory: Cancer Today. Lyon: International Agency for Research on Cancer; accessed February 2021).