

Role of Pharmacist bridging Gap between Cancer Care: A Journey of Hope

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ABSTRACT: Cancer is a leading global death cause, with rising risk factors indicating continued death tolls if not properly treated. However, early detection and effective treatment play crucial roles in improving cancer outcomes. Awareness, screening programs, and advancements in treatment options can all contribute to better outcomes and reduce the impact of cancer on individuals and communities.^[1] Pharmacist are essential healthcare practitioners in cancer care by bridging the gap in patients care and support throughout the journey. Their accessibility, credibility and widespread presence make them essential in providing care, support, education, and even early detection of symptoms. They are often the first point of contact for many patients and they contribute significantly to public health care, risk assessment, early detection and treatment.^[2] Counseling and support during treatment are vital for improving the quality of life and addressing psychological disorders that may arise. Pharmacists can offer valuable guidance on medication management, and emotional support,

contributing to a holistic approach to patient care during cancer treatment.^[3] The study aims to reduce cancer risks, educate patients, optimize treatment outcomes, manage side effects and enhancing overall quality of care. Highlighting the role of pharmacists and their interdisciplinary healthcare team.

Keywords: Healthcare, Public health, Malignancy, Cancer, Pharmacist.

I. INTRODUCTION:

Cancer are diseases characterized by uncontrolled growth and spread of abnormal cells, leading to metastasis and ultimately death if not controlled.

The term 'malignancy' refers to cancerous cells that have the ability to spread to other sites in the body (metastasis) or to invade nearby (locally) and destroy tissues, often with fast growth and genetic changes. These resistant cells may return after treatment is complete.

Its causes are multifaceted, including: -

External factors	Internal factors	Lifestyle factors
Tobacco	Inherited	Diet
Chemicals	Mutations	Physical activity
Radiation	Hormonal	Obesity
Infections	Influences	Exposure to environment pollutants

Understanding and managing these factors are crucial steps in cancer prevention and treatment.^[4] Factors can co-initiate or promote carcinogenesis in human body, making cancer the leading cause of death.

The prevalence of cancer in India is indeed significant, with millions of cases estimated

at any given time and hundreds of thousands of new cases and deaths occurring annually. Providing adequate facilities for diagnosis, treatment, and follow-up is essential to address this public health challenge effectively.^[5]

Types of cancer:

- Carcinomas are characterized by cells that cover internal and external parts of the body such as lung, breast and colon cancer.
- Sarcomas are characterized by cells that are located in bone, cartilage, fat, connective tissue, muscles and other supportive tissues.
- Lymphomas are cancers that begin in the lymph nodes and immune system tissues.
- Leukemia's are cancers that begin in the bone marrow and often accumulate in the bloodstream.
- Adenomas are cancers that arise in the thyroid, the pituitary gland, the adrenal gland and other glandular tissues.^[6]

Objectives:^[7,8]



Fig No.1 object is raising awareness about cancer

Role of Pharmacists:

Pharmacists play a crucial role in early cancer detection by interacting with patients and participating in screening programs. They can provide education on early cancer detection, through prescription medicine package inserts,

healthy lifestyle interventions, and medication counselling. Pharmacists can also identify eligible patients through risk assessment tools and refer them to appropriate facilities. They should be aware of local, regional, and national cancer screening programs.^[9]

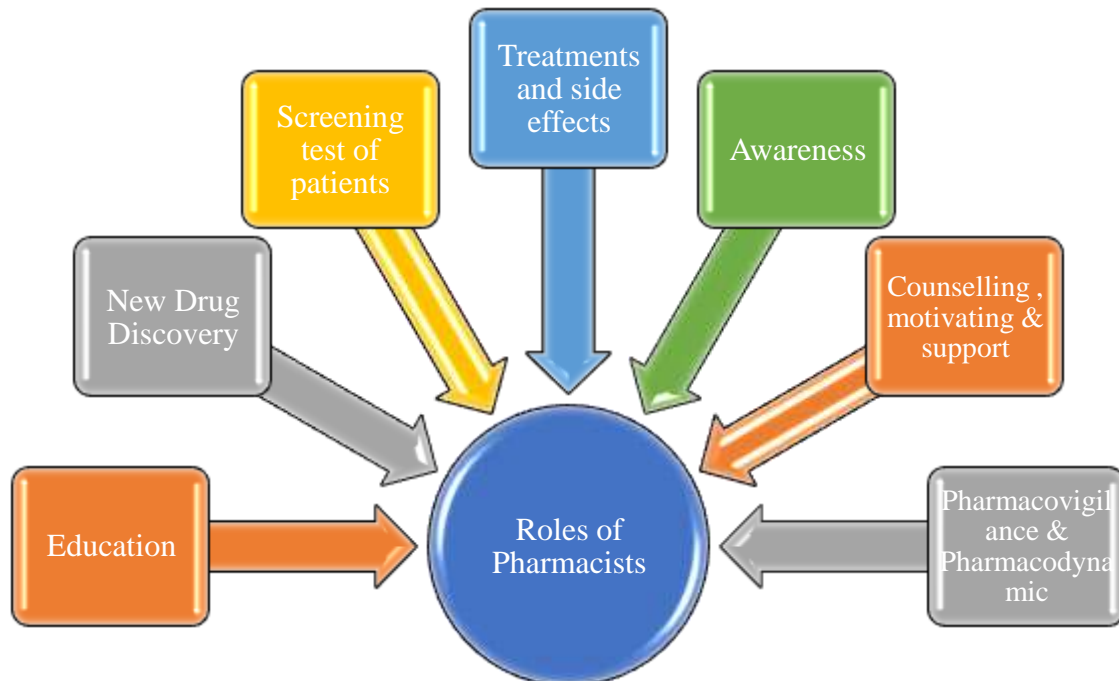


Fig No.2 Roles of Pharmacist

Education:

Pharmacists are well- positioned to provide education and guidance to patients about signs and symptoms of cancer. Their accessibility and expertise make them trusted sources for health information, and they can help individuals recognize potential warning signs of cancer, encourage seeking medical attention for further evaluation, and provide support and resources for cancer prevention and management.

Symptoms that cancer may cause include:

Breast changes

- Lump or firm feeling in your breast or under your arm
- Nipple change or discharge
- Skin that is itchy, red, scaly, dimpled, or puckered

Bladder changes

- Trouble urinating
- Pain when urinating
- Blood in urine

Bleeding or Bruising, for no reason

Bowel changes

- Blood in stools
- Changes in bowel habits

Cough or Hoarseness that does not go away

Eating problems

- Pain after eating (heartburn or indigestion that's doesn't go away).

- Trouble swallowing
 - Belly pain
 - Nausea and vomiting
 - Appetite changes
- Fatigue that is severe and lasts
 Fever or night sweats for no reason

Mouth changes

- A white or red patch on the tongue or in your mouth
- Bleeding, pain, or numbness in the lip or mouth

Neurological problems

- Headaches
- Seizures
- Vision changes
- Hearing changes
- Drooping of the face

Skin changes

- A flesh-colored lump that bleeds or turns scaly
- A new mole or change in an existing mole
- A sore that does not heal
- Jaundice (yellowish of the skin and whites of the eyes)

Swelling or lumps anywhere such as in the neck, underarm, stomach, and groin

Weight gain or weight loss for no reason

Personalized education is crucial for cancer patients. Assessing their knowledge level, preferred sources of information can help tailor education efforts to meet their specific needs.

By providing personalized information, healthcare providers can empower patients to better understand their condition, treatment options, and self-management strategies. This can lead to improve treatment adherence, earlier detection of potential complications, and ultimately better outcomes. Effective patient education not only informed decision making but also fosters a sense of empowerment and control over their health journey.^[10]

New Drug Discovery:

The advancement in genetic technology and our understanding of human genome have

revolutionized cancer research and treatment, and led to a growing understanding of cancers genetic changes, initiating and proliferation, therapeutic mechanisms and novel treatment targets forming the core of modern medicine. Targeted therapies offer a more precise approach, minimizing harm to healthy cells. Its exciting to see how these advancements are reshaping cancer therapy and offering new hope to patients.^[11]

Screening test for patients:

“Screening” The term regular use of certain screening refers to the examination or tests in people who do not have any symptoms of cancer, but are at high risk for developing certain types of cancer, with advancement of screening promising earlier detection and higher cure rates.

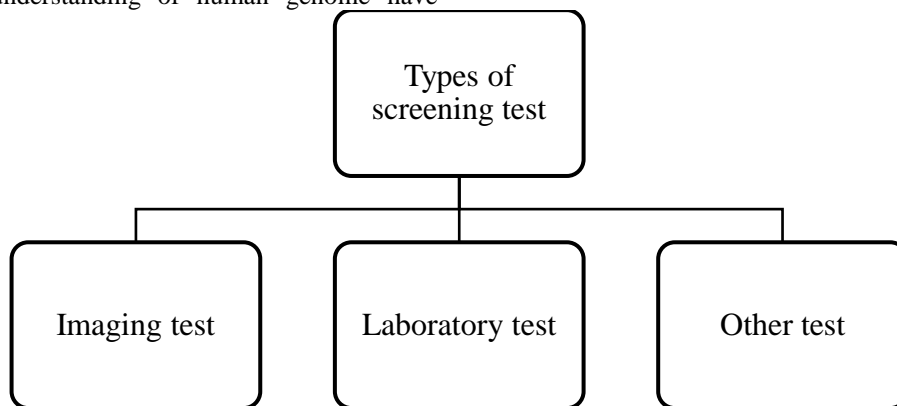


Fig No.3 Patient Screening test

1. Imaging Tests:

- **Mammograms:** This is screening test used to detect breast cancer in women. It involves taking X-ray images of the breast to identify any abnormalities or signs of cancer.
- **Computed Tomography (CT):** Is a medical imaging procedure that uses X-rays and computer technology to create detailed cross-sectional images of the body.

the presence of high-risk HPV strains in cervical cells. It can be done alone or in combination with Pap test.

- **Prostate-Specific Antigen (PSA) Test:** This blood test is used to screen for prostate cancer in men. It measures the level of Prostate-Specific Antigen (PSA) in the blood. Elevated PSA Levels may indicate the need for further evaluation, such as a biopsy.

2. Laboratory Tests:

Pap and HPV Testing:

- **Pap Test:** The Pap test, also known as Pap smear, is a small procedure where cells are collected from cervix to check for any abnormal changes. It helps detect precancerous or cancerous cells in the cervix early on.
- **HPV Test:** HPV stands for ‘Human Papilloma Virus’, which is commonly sexually transmitted infection. Certain types of HPV can cause cervical cancer. The HPV test checks

3. Other Testing Information:

Understanding cancer series:

- **Gene Testing:** This illustrates what genes are, explains how mutations occur and are identified within genes and discusses the benefits of gene testing for cancer and other disorders.
- **What you need to know about cancer index:** The Cancer Index, often referred to as the cancer survival index, is a statistical tool used to measure and compare cancer survival rates

among different populations or groups of patients.

- **It includes various metrics such as:** Overall survival rates, Relative survival rates, Survival disparities, Cancer stage at diagnosis, Treatment effectiveness and Trends over time.^[12]

Treatments and Side Effects:

1. Surgery: This involves removing the cancerous tumor and nearby tissues.

Side effects may include: Pain, infection, bleeding or changes in the body function depending on the area operated on.

2. Chemotherapy: It uses drugs to kill cancer cells throughout the body.

Side effects may include: Hair loss, nausea, vomiting, fatigue and increased risk of infection.

3. Radiation therapy: It uses high-energy beams to target and destroy cancer cells.

Side effects may include: Skin changes, fatigue, hair loss, and potential damage to nearby healthy tissues.

4. Immunotherapy: This treatment helps the body's immune system fight cancer cells.

Side effects may include: Fatigue, flu-like symptoms, skin reaction, and potential autoimmune reactions.

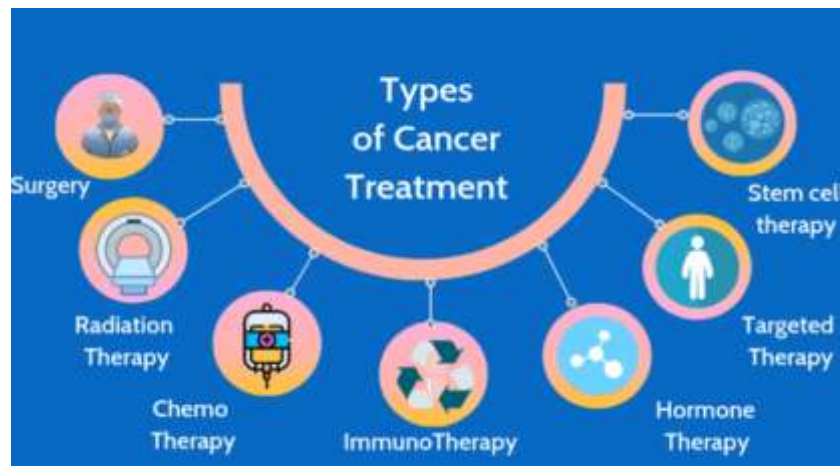


Fig No. 4 Treatment of Cancer

5. Targeted therapy: It targets specific genetic changes or proteins in cancer cells.

Side effects vary depending on the medication used but can include: Skin problems, diarrhea, liver problems, and high blood pressure.

6. Hormone therapy: This treatment is commonly used for hormone sensitive cancers like breast and prostate cancer. It works by blocking or lowering the levels of certain hormones that fuel cancer growth.

- For breast cancer: Hormone therapy may involve medications like tamoxifen or aromatase inhibitors.

Side effects can include: Hot flashes, mood changes, vaginal dryness and increased risk of blood clots.

- For prostate cancer: Hormone therapy may involve medications that lower testosterone levels.

Side effects can include: Hot flashes, loss of libido, erectile dysfunction, fatigue and potential bone thinning.

7. Stem cell therapy: This approach involves using stem cells to replace damage or destroyed cells in the body. In cancer treatment, stem cell therapy is often used after high-dose chemotherapy or radiation to restore healthy blood cells.

- Autologous stem cell transplant: This involves using the patient's own stem cells.

Side effects can include: infection, bleeding, fatigue, nausea and potential damage to organs.

- Allogeneic stem cell transplant: This involves using stem cells from a donor.

- Side effects can include: Graft-versus-host disease (when the donor cells attack the recipient's tissues), infection, organ damage and potential complications from the transplant process.^[13]

Awareness:

Raising awareness about early detection and prevention through educational campaigns can encourage regular screenings and promote a

healthy lifestyle, potentially saving lives through knowledge about risk factors and symptoms.^[14] Rural cancer awareness and early detection are lacking due to a lack of facilities. Biopsies and blood samples are sent to cities, causing delays in treatment and disease progression. This creates a vicious cycle, with poor outcomes for advanced patients and insufficient motivation for timely treatment. Breaking this cycle requires organizing healthcare services closer to rural communities, making it more accessible and convenient for patients.^[15]

Counselling, Motivation & Support:

A positive outlook and belief in a cure are crucial in battling cancer. Pharmacists play a vital role in supporting cancer patients both emotionally and practically. Their guidance on supplementary measures like yoga, nutrition and medication can complement medical treatments, enhancing overall well-being. Additionally, their counsel and support contribute significantly to patient's positive outlook, which is crucial in battling cancer. And post-cure, they continue to aid survivors in improving their quality of life.

Pharmacists can provide emotional and mental support to cancer patients in several ways:

1. Active listening: I'm here to lend an ear and listen to any concerns or fears you may have. Sometimes, just having someone to talk to can make a big difference.

2. Empathy and Understanding: I understand that dealing with cancer can be overwhelming. I'll do my

best to empathize with your situation and provide support without judgement.

3. Education and information: I can help you understand your medications, potential side effects, and how they may affect your emotional well-being. Knowledge can empower you to make informed decisions about your treatment.

4. Referrals: If you're struggling with your emotional well-being, I can connect you with support groups, counselling services, or other resources in your community that specialize in providing emotional support to cancer patients.^[16,17]

Pharmacovigilance & Pharmacodynamic:

Pharmacovigilance in cancer patients is crucial for managing medications. Pharmacists monitor drug interactions, side effects, and ensure proper dosing to maximize efficacy and minimize risks. It involves continuous surveillance, reporting and analysis of drug-related adverse events in cancer patients to improve the understanding of drug profiles and guide clinical decision making.

Pharmacodynamic management by pharmacists in cancer patients involves understanding how drugs interact with the body to produce therapeutic effects and adverse reactions. Pharmacists optimize drug therapy by monitoring patients for efficacy and safety, adjusting dosages as needed, and providing education on potential side effects and drug interactions. They work closely with healthcare teams to ensure that cancer patients receive the most appropriate and effective pharmacological treatment.^[18,19]

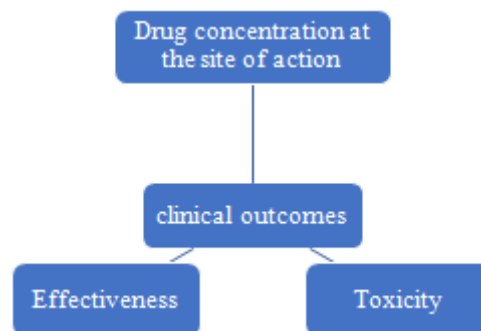


Fig No.5 Effect of Dose

Barriers in early cancer diagnosis and treatment:

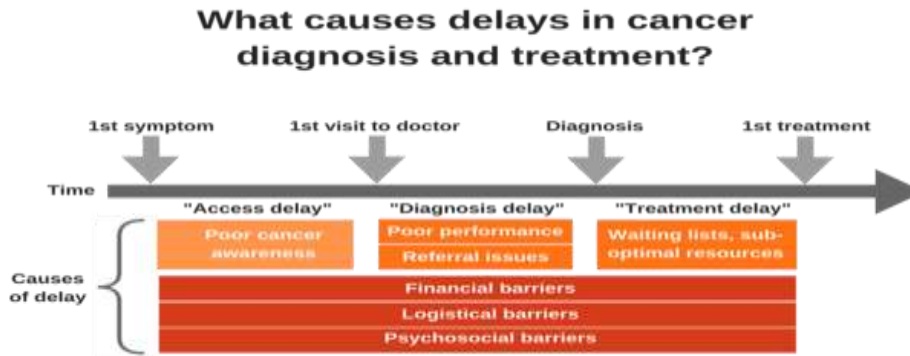


Fig No.6 Causes of Cancer

Financial barriers in cancer treatment can include:

- 1. High treatment costs:** Cancer treatments such as surgery, chemotherapy, and radiation therapy can be expensive, especially when considering multiple sessions or prolonged treatment plans.
- 2. Insurance limitations:** Some insurance policies may have restrictions on coverage for certain treatments, medication or procedures. This can result in higher out of pocket expenses for patients.
- 3. Co-pays and deductibles:** Even with insurance coverage, patients may still be responsible for co-pays and deductibles, which can add up significantly over time.
- 4. Lost income and employment challenges:** Cancer treatment often requires time off work for appointments, recovery and managing side effects. This can lead to reduced income or even job loss, making it difficult to afford treatment costs.
- 5. Additional expenses:** Cancer treatment may involve other expenses like transportation to and from medical facilities, accommodation for out-of-town treatments, or specialized equipment or supplies.

These financial barriers can create stress and uncertainty for patients and their families. Its important to explore resources and support to help alleviate these challenges.^[20]

❖ Logistical barriers in cancer treatment refers to challenges related to the organization and co-ordination of healthcare services. Some common logistical barriers are:

- 1. Distance and transportation:** cancer treatment centers may be located far from a patient’s home, require long travel distances. Lack of transportation or difficulties in arranging transportation can make it challenging for patients to access treatment.

2. Appointments scheduling and co-ordination:

Cancer treatment often involves multiple appointments with different healthcare providers, including oncologists, surgeons, radiologists and other specialists. Coordinating these appointments and managing scheduling conflicts can be complex and time consuming.

3. Availability of specialized services: Certain cancer treatments or procedures may only be available at specific healthcare facilities. Patients may face logistical challenges in accessing these specialized services, especially if they live in remote or underserved areas.

4. Waiting times: Due to high demand and limited resources, there can be delays in scheduling appointments, diagnostic tests, or surgeries. Waiting for necessary procedures or treatments can cause anxiety and prolong the overall treatment timeline.

5. Language and communication barriers: Language differences or limited proficiency in the local language can make it difficult for patients to understand medical instruction, communicate their concerns, or navigate the healthcare system effectively.^[21]

❖ Psychosocial barriers in cancer treatment refer to the emotional, social and psychological factors that can impact a patients experience and access to care. Some psychological barriers are:

- 1. Emotional distress:** A cancer diagnosis can lead to a range of emotions, including fear, anxiety, depression and grief. These emotional challenges can affect a patients ability to cope with the treatment process and may require additional support.

2. Lack of social support: Having a strong support system of family, friends or support groups can be crucial during cancer treatment. However, some patients may face barriers in accessing or receiving adequate social support, which can impact their overall well-being.

3. Stigma and discrimination: Cancer can sometimes carry a social stigma, leading to feelings of shame or isolation. Patients may face discrimination or judgment from others, which can affect their mental health and willingness to seek treatment.

4. Communication and information gaps: Understanding complex medical information, treatment options, and navigating the healthcare system can be overwhelming. Language barriers, limited health literacy, or a lack of clear communication from healthcare providers can create psychosocial barriers to accessing appropriate care.

5. Cultural or religious beliefs: Cultural or religious beliefs and practices can influence a patient's decision making process regarding cancer treatment. These beliefs may impact their willingness to pursue certain treatment or engage in supportive care services.^[22]

II. CONCLUSION:

- Cancer care is to provide comprehensive and personalized treatment to individuals affected by cancer. This includes early detection, accurate diagnosis, effective treatment options, symptom management, and supportive care.
- The ultimate goal is to improve patient outcomes, enhance quality of life and promote survivorship.
- Cancer care aims to address the physical, emotional and psychological needs of patients, ensuring they receive the best possible care throughout their journey.
- The battle against cancer is not just a medical one; it is a fight for equality and justice. It's a call to action for societies worldwide to ensure that no individual is left behind due to socio-economic status, geographical location, or any other discriminatory factor.
- By working together, we can make a difference and pave the way for a future where quality cancer care is a fundamental right for all. Let us stand united in our efforts to bridge the care gap and bring hope and healing to those in need.
- Pharmacists truly make a difference in the lives of those affected by cancer.

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