

Introduction to Public Health

Module # 16

Concept of cancer. Causes or Risk factors of cancer; Breast cancer with prevention

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OBJECTIVES OF THE LECTURE

By the end of this lecture you will be able to:

- *Conceptualize*
 - *Cancer*
 - *Risk factors for cancer, Breast cancer etc.*
 - *Prevention of cancers, Breast cancer etc.*
- *Understand the public health problem of cancer etc*

Cancer



Cancer may be regarded as a group of diseases

Characterized by an (a) abnormal growth of cells (b)ability to invade adjacent tissues & even distant organs, and © the eventual death of the affected patient if the tumor has progressed beyond that stage when it can be successfully removed.

Cancer can occur at any site or tissue of the body and may involve any type of cells.

Cancer

- Generic term for a large group of diseases that can affect any part of the body
- “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.” (WHO, 2012)
- Benign tumors:
 - Do not penetrate adjacent tissue borders
 - Remain localized overgrowths in the area in which they arise
- Malignant tumors:
 - Capable to spread the neoplasms into adjacent structures
 - Implant neoplasms into noncontiguous sites

Global burden of cancer

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- 7.6 million people died from cancer in 2008
- 70% of all cancer deaths occur in LMIC
- Deaths from cancer are estimated to reach 13.1 million by 2030
- About 30% of cancers are attributable to behavior risk factors.

Why NCDs Are Important in Public Health?

- NCDs kill 38 million people each year
- Almost three quarters of NCD deaths - 28 million - occur in LMIC
- Sixteen million NCD deaths occur before the age of 70; 82% of these "premature" deaths occurred in LMIC
- Cardiovascular diseases account for most NCD deaths, or 17.5 million people annually, followed by cancers (8.2 million), respiratory diseases (4 million), and diabetes (1.5 million).
- Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets all increase the risk of dying from an NCD

Causes of Cancer

Exact Causes of most of the cancers are still unknown, but there are some risk factors which may be responsible for most of the cancers

All the risk factors may be brought under two groups:

1. Environmental factors :

- a) Tobacco, b) Alcohol, c) dietary factors, d) occupational exposure, e) Customs, habits, life-styles
- f) Viruses, g) Parasites, h) Radiation, Sunlight, air & water pollution, Medication (oestrogen), pesticides etc.

Causes of Cancer



- 2. Genetic factors:

Retinoblastoma occurs in children of the same parents. However, genetic factors are less conspicuous and more difficult to identify. There is probably a complex interrelationship between hereditary susceptibility and environmental carcinogenic stimuli in the causation of a number of cancers.

Control of Cancer

Cancer control consist of a series of measures based on present medical knowledge in the field of prevention, detection, diagnosis, treatment, after care and rehabilitation, aimed at reducing significantly the number of new cases, increasing the number of cures and reducing the invalidism due to cancer.

The basic approach-

A. Primary Prevention:

- I. Control of Tobacco and Alcohol Consumption
- II. Personal Hygiene
- III. Radiation
- IV. Occupational Exposures
- V. Immunization
- VI. Foods, Drugs and Cosmetics

Conti...

- VII. Air Pollution
- VIII. Treatment of Precancerous Lesions
- IX. Legislation
- X. Cancer Education

B. Secondary Prevention

- i. Cancer Registration
 - a. Hospital-Based Registration
 - b. Population-Based Registration
- ii. Early Detection of Cases
- iii. Treatment

Breast Cancer



- Risk factors:
 - a) AGE: uncommon below the age 35, common between the age of 35 & 50
 - b) FAMILY HISTORY: high in those with a positive family history
 - c) PARITY: directly related to the age at which woman bear the first child, delayed pregnancy to late thirties are at a higher risk

Conti..

- d) **AGE AT MENARCHE AND MENOPAUSE:** early menarche and late menopause are established risk factors
- e) **HORMONAL FACTORS:** ovary appears to play a crucial role in the development of BC
- f) **PRIOR BEAST BIOPSY:** prior breast biopsy for benign breast disease is associated with an increased risk of BC
- g) **DIET:** BC is linked with a high fat diet and obesity
- h) **SOCIO-ECONOMIC STATUS:** common in higher socio-economic groups

Conti...

i) OTHERS:

- I. Radiation: an increased incidence of BC has been observed in women exposed to radiation
- II. Oral contraceptives: appears to have little overall effect on BC, although prolonged use of oral pills before the first pregnancy or before the age 25 may increase the risk in younger women.

Prevention of Breast Cancer



a. Primary Prevention:

- Current knowledge of the aetiology of breast cancer offers little prospect of primary prevention, however, the aim should be towards elimination of risk factors and promotion of cancer education. The average age of menarche can be increased through a reduction in childhood obesity and an increase in strenuous physical activity and the frequency of ovulation decreased by an increase in strenuous physical activity. There is also good reason for reducing fat intake in diet.

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b. Secondary Prevention:

- Breast screening leads to early diagnosis of breast cancer, which in turn influence treatment and, hopefully, mortality. An important component of secondary prevention is follow-up, i.e., to detect recurrence as early as possible; to detect cancer in the opposite breast at an early stage and to generate research data that might be useful.