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### Epidemiology and impact of non-communicable diseases

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#### Abstract

Non communicable diseases are the leading cause of death and disability whole over the world. The main non communicable diseases include cardiovascular disease, Cancer, Diabetes and Chronic respiratory diseases. To prevent and control the non-communicable diseases it very essential to know the epidemiology of the disease. To address any health problem it is very essential to know the size of population. Epidemiology helps to find out the frequency, distribution and determinants of diseases. Non communicable diseases kills around 41 million people each year which is equal to 74% of total death worldwide. The determinants of these disease include cultural, political environmental and socioeconomic factors, modifiable and non-modifiable risk factors and metabolic risk factors. Impact of non-communicable disease include the macroeconomic impact and microeconomic impact. Disease burden estimation based on epidemiological consideration will help the health authorities for proper policy planning and programme management.

**Keywords:** Non-communicable diseases, epidemiology, cardiovascular disease, cancer, diabetes, chronic respiratory disease, determinants, macroeconomic impact, microeconomic impact

#### Introduction

Chronic non communicable diseases are the number one cause of death and disability in the world. The term NCDs refer to a group of conditions that are not mainly caused by an acute infection, results in long term health consequences and often create a need for long term treatment and care. These conditions include cancers, cardiovascular diseases, diabetes and chronic lung diseases.

#### Definition

##### Non communicable diseases

Non Communicable diseases are also known as chronic diseases that are not passed from person to person. They are of long duration and generally slow progression.

#### Epidemiology

The study of frequency, distribution and determinants of health related states and events in specified population and the application of this study to control the health problems.

#### Sources of Epidemiological data

##### A. Morbidity Data

##### 1. Medical certification of cause of death in vital events registration systems:

This is the most important source of reliable, good quality data on NCD related mortality due to NCD in many countries. Over all national level coverage is 15 to 60%, better seen in urban areas as compared to rural areas. The other two shortcomings of the data from medical certification is the

quality of medical certification and the delay in publication of these data by the government.

##### 2. Surveys on cause of death

Some countries carryout household surveys in a representative sample to ascertain the cause of death using verbal autopsy method. Medical or paramedical personnel classify the cause of death based on broad symptoms and conditions, anatomical site involved and duration of the complaint.

##### 3. Hospital based information

This is the most easily available data. Information can be availed from both public and private sectors.

#### B. Morbidity Data

##### 1. Disease registries

They are perhaps the best source of information for NCDs. However, currently disease registries are limited to a few countries and that too for selected diseases only such as cancer. Efforts are going on to create disease registries for other diseases especially stroke, diabetes etc.

##### 2. Special surveys

This method can provide the most valid information on disease morbidity. These surveys can be carried out by individual or research agencies covering small samples of individuals in convenient location.

### 3. Hospital based reporting system

From the hospital the information can be taken about old as well as new cases.

#### Epidemiology of NCDs

- Non communicable diseases (NCDs) kill 41 million people each year, equivalent to 74% of all death globally.
- Each year, 17 million people die from NCD before age 70.
- Every 2 seconds a person dies prematurely from NCD.
- 86% of these premature deaths occur in low and middle income countries.
- According to WHO by the year 2030 the total no of death will increase up to 55 million.
- In India 66% of total deaths were caused by NCDs. Approximately 60.46 lakh people died due to NCDs.

#### Cardiovascular disease

**Cardiovascular diseases are a group of disorders of the heart and blood vessels. They include:**

- Coronary heart disease
- Cerebrovascular disease
- Peripheral arterial disease
- Rheumatic heart disease
- Congenital heart disease
- Deep vein thrombosis and pulmonary embolism.

#### According to Global Heart & Circulatory Diseases Factsheet (August 2022)

- Around 550 million people living with heart and circulatory diseases.
- Globally 1 in 4 people
- There are more women than men. 290 million women (53%) and 260 million men.

#### Global Deaths from Cardiovascular Diseases

- 1 in 3 deaths globally (34%)
- 19 million deaths each year, an average of 50,000 people each day or one death every 1.7 seconds.
- 9.8 million men and 9.2 million women.
- Projected to rise more than 23 million by 2030 and more than 34 million by 2060.

#### Coronary Heart Disease

- Total 200 million people
- 110 million men and 80 million women.
- It kills 9 million people each year. 1 in 6 deaths globally.

#### Stroke

- Total 100 Million.
- 56 Million women and 45 million men.
- 6.6 Million Deaths.
- 1 in 9 deaths globally.

#### Cardiovascular Disease in India

- India accounts for one – fifth of the total death globally.
- Approximately 25.66 Lakh deaths were due to CVD.
- According to Global Burden of Disease Study
- CVD death rate 272 per 100000 population in India.
- 28.1% of total death

- 14.1 % of DALYs.

#### CANCER

Cancer is characterized by the development of abnormal cells that divide uncontrollably and have the ability to infiltrate and destroy normal body tissue.

#### Global Cancer Statistics 2022

- Approximately 19 -20 million people are diagnosed with cancer annually worldwide.
- 10 million death occur annually.
- By 2040 the cancer incidence and mortality are expected to rise to 29.5 million and 16.3 million.
- Incidence :
- Breast cancer - 2.26 million cases
- Lung – 2.21 million cases
- Colon and rectum – 1.93 million
- Prostate – 1.41 million
- Skin – 1.20 million
- Stomach – 1.09 million.

#### Total deaths

- Lung – 1.80 million
- Colon and rectum – 9,16,000
- Liver – 8,30,000
- Stomach – 7,69,000
- Breast – 6,85,000
- Approximately 4,00,000 children develop cancer each year.

#### Cancer Statistics in India

- According to report of GLOBOCAN Approximately 1.1 million cases and more than 0.7 million deaths annually.
- 5.7% of all deaths in India.
- 0.8 Million new cases every year.
- In 2040 nearly 2 million new cancer cases and more than 1 million deaths are estimated.

#### Chronic Respiratory Disease

- Chronic respiratory disease affect the airways and other structures of the lungs.
- It includes:
- Chronic obstructive pulmonary disease (COPD)
- Asthma
- Occupational lung diseases
- Pulmonary hypertension.

#### Forum of International Respiratory Societies (FIRS)

- An estimated 200 million people have COPD
- 3.2 million die each year
- 90% of COPD deaths is under 70 years age
- Asthma is affecting 262 million people.

#### Global Burden of Disease data

- 10.9% of the total deaths and 6.4% of the total DALYs in India is due to Chronic respiratory disease.
- Approximately 11.46 Lakh death occur annually.

#### Diabetes

Diabetes is a chronic, metabolic disease characterized by

elevated levels of blood glucose, which leads overtime to serious damage to the heart, blood vessels, eyes, kidneys and nerves.

**International Diabetes Federation (2022)**

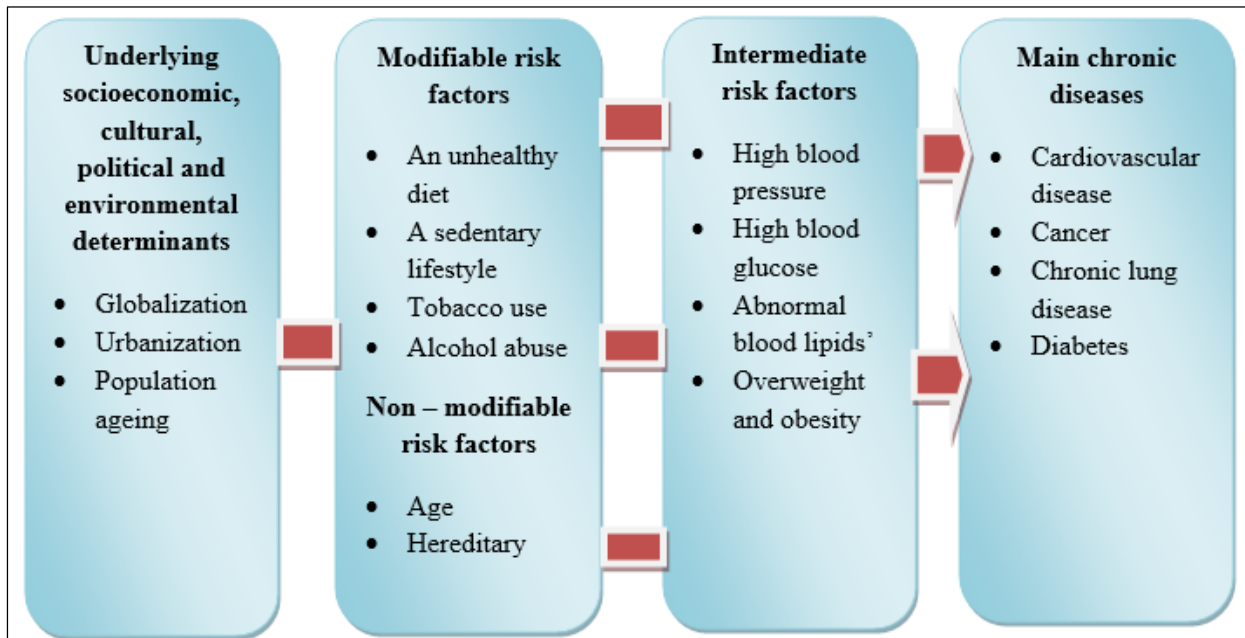
- 537 million adults (20 -79 years) are living with diabetes – 1 in 10 people.
- It is predicted to rise to 643 million by 2030 and 783 million by 2045.

- 6.7 million Deaths.
- 1 every 5 seconds.

**Diabetes statistics in India**

- India accounts for 17% of total diabetes patients in the world.
- 80 million people are living with diabetes
- Approximately 3.49 Lakh deaths occur annually.
- It is expected to rise 135 million by 2045.

**Determinants of NCDs**



**Impact of Non-Communicable Diseases**

**Macroeconomic Impact (Economy):** They are broad indicators of financial growth or decline that affect the economy. A macroeconomic factors is a geopolitical, environmental or economic event that can impact the monetary stability related to the whole economy of the country or region.

- Reduced labour force from mortality, absenteeism, disability and early retirement.
- Higher dependency ratio
- Reduced access to factors of production. = Land, Labour, Capital and entrepreneurship.
- Additional cost to employers (e.g. Insurance)
- Lower tax revenues.
- Lower returns on human capital Investments.
- Increased public health and social welfare expenditures.

**Microeconomic Impact (Household):** it deals with impact at the household and individual level.

- Reduced wellbeing and increased disabilities.
- Premature death.
- Decrease household income.
- Higher health expenditures.
- Savings and assets loss.
- Reduced opportunities.

**Impact on Health Systems**

- Increased consumption of NCD – related health care.
- High medical treatment costs (per episode and overtime)
- Demand for more effective treatments. (e.g. cost of technology and innovation)
- Health system adaptation needs

**Main Impact Areas**

- Country productivity and competitiveness.
- Fiscal pressures.
- Health outcomes.
- Poverty, inequity and opportunity loss.

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### How to Cite This Article

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